

Extractives industry

2021/22 Q3

January to March



Te Kāwanatanga o Aotearoa
New Zealand Government

WORKSAFE
Mahi Haumarū Aotearoa

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.

The Health and Safety at Work (Mining Operations and Quarrying Operations) Amendment Regulations were posted on the 7 June 2022 and the first part of the changes to the regulations came into effect on 18 July 2022.

The process to review and amend the regulations started back in 2018 and, due to several reasons, the updating took longer than initially anticipated.

But they are now here, and it is important that the Extractive Industry looks forward and makes the adjustments required by the amended legislation.

WorkSafe have already begun to educate industry with a series of presentation nights across the country. This first session was set at a high-level and focused on summarising the changes that have been made.

The changes to the regulations are more significant for the Quarry and Alluvial sectors than for the mining and tunnelling sectors; therefore, we decided to tailor our introduction to the different sectors and are running different update sessions.

WorkSafe will very much take an education approach to the new regulations. The majority of significant legislative changes required are progressively introduced over several years.

This staged introduction is important to understand. Essentially, different requirements come into effect after a reasonable time is given to operators to prepare to comply. This results in an updated version of the regulations being available on each of the dates below:

- Part 1: 18 July 2022
- Part 2: 18 July 2023
- Part 3: 18 July 2024
- Part 4: 18 July 2025 (final version).

This staged introduction will mean there is time for operators to comply and that WorkSafe will be able to explain what will be expected and to assist where we can.

WorkSafe's role will be to first educate and engage, and only following this, to enforce.

We recommend that you attend our roll out sessions and read the online supporting information and guidance.

And if you are still unsure, talk to your local inspector.

Read about the [key changes to the regulations](#)



A handwritten signature in black ink, appearing to read 'Paul Hunt'.

Paul Hunt

Chief Inspector Extractives

About this report

This quarterly health and safety performance report has been prepared by WorkSafe 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 mining and tunnelling sector 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.

CONTENTS

1.0	Industry profile	2
1.1	Operations	3
1.2	People	4
1.3	Developing competence	6

2.0	Health and safety performance	8
2.1	Notifiable events	9
2.2	Injuries	10
2.3	Types of events	12
2.4	Mine and tunnel focus areas	13
2.5	Regulator comments	14
2.6	High potential incidents	15
2.7	High potential incidents - investigation outcomes	20

3.0	The regulator	24
3.1	Our activities	25
3.2	Assessments	25
3.3	Enforcements	27

tables

1	Oral exams conducted	6
2	Certificates of Competence issued and in circulation	7
3	Mines and tunnels - notifiable events and operations that notified events	9
4	Quarries and alluvial mines - notifiable events and operations that notified events	9
5	High potential incidents - 2021/22 Q3	16
6	High potential incidents per quarter	16
7	High potential incident - ADT incidents	20
8	ADT incidents - PCBU investigation findings	22
9	Proactive and reactive site and desk-based assessments conducted	25

figures

1	Total hours worked by sector 2021/22 Q3	5
2	Number of FTEs by sector 2021/22 Q3	5
3	Notifiable events by sector	9
4	TRIFR - mines and tunnels	10
5	Number of injuries resulting in more than a week away from work	11
6	Sum of claims cost (excluding GST) for injuries resulting in more than a week away from work	11
7	Mines and tunnels notifiable event categories for the previous 12 months	12
8	Quarries and alluvial mines notifiable event categories for the previous 12 months	13
9	Fire, ignition, explosion or smoke-related notifiable event sub-categories	13
10	Vehicles and plant-related notifiable event sub-categories	14
11	Number of high potential incidents per quarter	16
12	Proactive and reactive site and desk-based assessments	26
13	Assessments by sector	26
14	Enforcement actions issued by type	27
15	Enforcement actions issued by sector	27
16	Enforcement actions issued by category 2021/22 Q3	28



1.0

Industry profile

IN THIS SECTION:

- 1.1 Operations
- 1.2 People
- 1.3 Developing competence

1.1 Operations

3

Metalliferous opencast mines

Includes one mine under care and maintenance and one mine under rehabilitation

22

Coal opencast mines

Includes four mines under care and maintenance, and one undertaking rehabilitation

6

Metalliferous underground mines

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

2

Coal underground mines

Includes one tourist mine under care and maintenance

5

Tunnels

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

1

Coal exploration

One notification of drilling commencement in the quarter

63

Alluvial mines

Number of mines that have been verified (51) or have notified of an Appointed Manager to WorkSafe (12) (includes 2 iron sands mines)

966

Quarries

Number of quarries that have been verified (854) or have notified of an Appointed Manager to WorkSafe but not yet verified (112)

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 1,068 active operations in New Zealand as at the end of March 2022.

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.

The numbers of operations will vary from quarter to quarter. In these first quarterly reports, many of the changes are due to verification of sites by our inspectors, rather than actual changes to operations.

1.2 People

739

Metalliferous opencast mines

521 FTEs employed by mine operators and 219 FTEs employed by contractors

708

Coal opencast mines

593 FTEs employed by mine operators and 116 FTEs employed by contractors

436

Metalliferous underground mines

356 FTEs employed by mine operators and 80 FTEs employed by contractors

15

Coal underground mines

9 FTEs employed by mine operators and 6 FTEs employed by contractors

687

Tunnels

310 FTEs employed by mine operators and 377 FTEs employed by contractors

<1

Coal exploration

2 workers employed by mine operators worked 100hrs and 1 worker employed by contractors worked 20 hours

218

Alluvial mines

Number of workers is known for 26 of the 63 alluvial mines that are verified and/or have notified of an Appointed Manager. The total number of workers has been extrapolated for the remaining 37 operations

2,985

Quarries

Number of workers is known for 737 of the 966 quarries that are verified and/or have notified of an Appointed Manager. The total number of workers has been extrapolated for the remaining 229 operations

There were 5,788 Extractives FTEs in New Zealand as at the end of March 2022. 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.

Figure 1 shows the total hours worked by the mining and tunnelling sectors in Q3 2021/22. The hours are separated into Employees and Contractors.

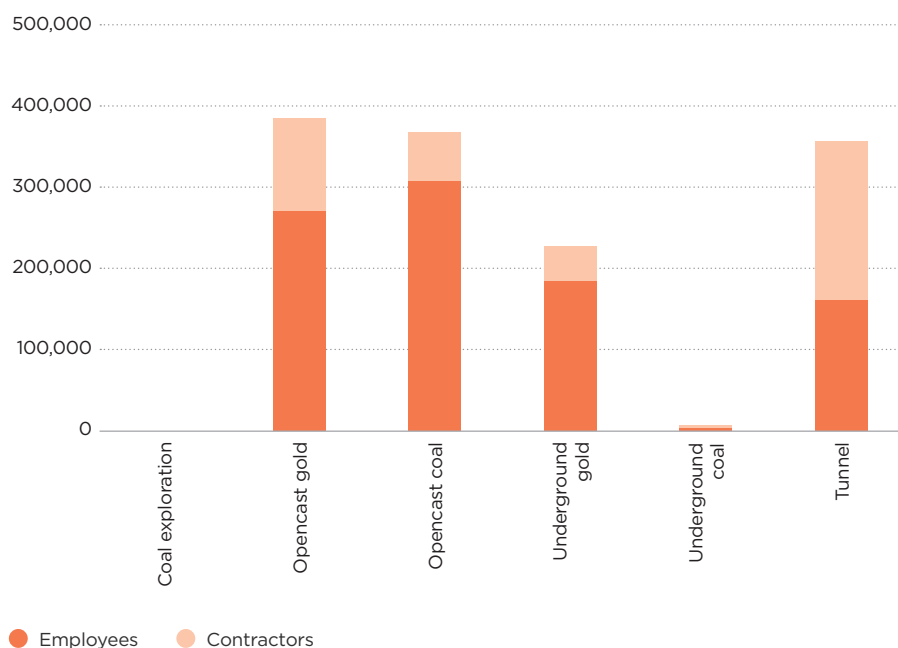


FIGURE 1:
Total hours worked by sector 2021/22 Q3

Figure 2 shows the number of Full Time Equivalents (FTEs) calculated from total hours worked for the mining and tunnelling sectors in Q3 2021/22. The hours are separated into Employees and Contractors.

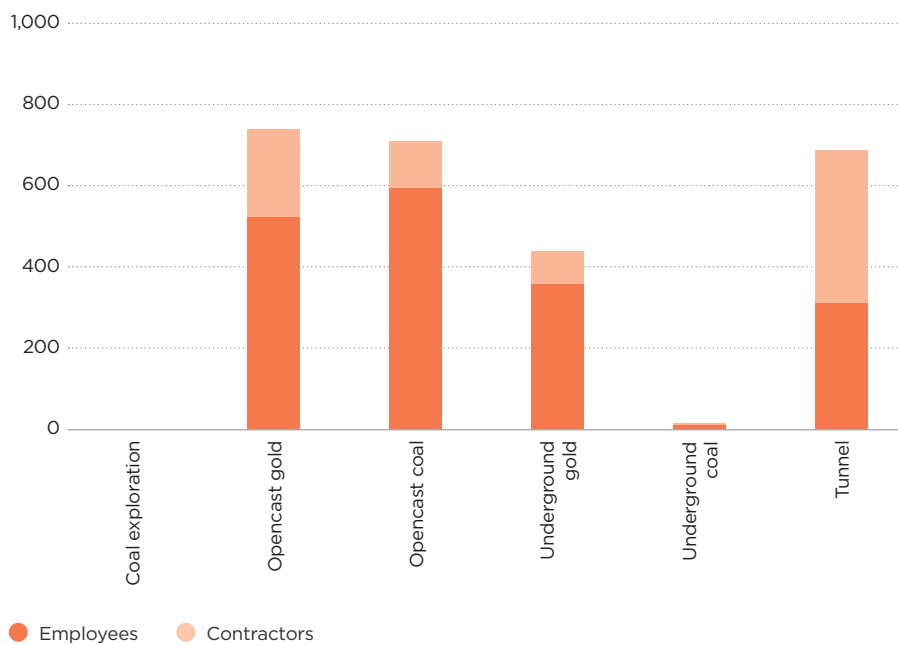


FIGURE 2:
Number of FTEs by sector 2021/22 Q3

1.3 Developing competence

WorkSafe has responsibility for setting the 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).

WorkSafe has been updating the CoC register, shifting our current register to a new system. This also includes the development of a new online application process for new CoCs and renewals. The development of this system is intended to deliver a better experience for applicants – it will include easier ways to attach documentation and will likely include an easier verification process for documents.

The delivery of online oral examinations has been very successful and despite Covid, the time taken for an applicant to be given an oral exam date has now settled down to a few months, and we have no backlog of candidates awaiting exams. I would note that this refers to candidates that submitted all of the correct information and who met the logbook experience requirements.

TTMR applications have caused some delays, but generally if we can get verification from the original jurisdiction, we can process them within two to three months. We do have applications where we cannot get verification, and this requires our subcommittee to assess against several factors to determine equivalent occupation.

Renewals have continued to be a problem through the last quarter. We have almost cleared the backlog from last year when 700 CoCs expired, and we received 500 plus applications for renewals. Generally, most of those that were delayed did not have sufficient information to process the renewal – the main issue being insufficient CPD hours or evidence to support the hours claimed.

WorkSafe took a very pragmatic view, and as these were first time renewal applicants who had not previously submitted logbooks, we have worked with those persons to try and renew.

Hopefully by the end of Q4, any new renewals will on track to be processed within two months.

Going forward, we will report on the number of oral exams held each quarter, number of new CoCs issued, number of CoCs renewed, as well as the total number of current CoCs in circulation (**Note:** Lifetime CoCs are not included, and any backlog of CoCs that have been delayed past expiry will not show until the following quarter or when completed).

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

TOTAL NUMBER OF ORAL EXAMS HELD Q3 JAN – MAR 22	TOTAL PASSES	% SUCCESS
28	18	64.29

TABLE 1:
Oral exams conducted

Table 2 provides a summary of all CoC's issued during the quarter and the current number of CoCs in circulation at the end of Q3 2021/22.

Note: We no longer report Life Time CoCs.

COC TYPE	TOTAL COCs RENEWED Q3 Jan-Mar 2022	TOTAL NEW COCs ISSUED Q3 Jan-Mar 2022	TOTAL NUMBER OF CURRENT COCs
A Grade Quarry Manager	3	3	212
B Grade Quarry Manager	11	10	305
A Grade Opencast Coal Mine Manager	0	2	52
B Grade Opencast Coal Mine Manager	3	0	46
A Grade Tunnel Manager	3	0	33
B Grade Tunnel Manager	1	2	66
Site Senior Executive	0	0	52
First Class Coal Mine Manager	0	0	15
First Class Mine Manager	0	0	18
Coal Mine Deputy	1	0	28
Coal Mine Underviewer	1	0	18
Mechanical Superintendent	1	1	22
Electrical Superintendent	0	0	16
Ventilation Officer	0	0	4
Mine Surveyor	0	0	12
Site Specific	0	0	2
Winding Engine Driver	0	0	0
Total	24	18	901

TABLE 2: Certificates of Competence in circulation



2.0 Health and safety performance

IN THIS SECTION:

- 2.1 Notifiable events
- 2.2 Injuries
- 2.3 Types of events
- 2.4 Mine and tunnel focus areas
- 2.5 Regulator comments
- 2.6 High potential incidents
- 2.7 High potential incidents
- investigation outcomes

2.1 Notifiable events

Notifiable events are required to be reported to WorkSafe under S23(1), S24(1) and S25(1) of the Act, and for mining and tunnelling operations, 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 three years and for Q1 to Q3 of 2021/22 for mines and tunnels (Table 3) and quarries and alluvial mines (Table 4).

MINES AND TUNNELS	2018/19 QUARTERLY AVERAGE	2019/20 QUARTERLY AVERAGE	2020/21 QUARTERLY AVERAGE	2021/22 Q1	2021/22 Q2	2021/22 Q3
Number of notifiable events	18	20	18	20	24	21
Number of operations that notified events	9	11	9	11	12	12

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

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

QUARRIES AND ALLUVIAL MINES	2018/19 QUARTERLY AVERAGE	2019/20 QUARTERLY AVERAGE	2020/21 QUARTERLY AVERAGE	2021/22 Q1	2021/22 Q2	2021/22 Q3
Number of notifiable events	14	18	16	10	13	16
Number of operations that notified events	13	15	12	9	13	15

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

Forty individual quarries and alluvial mines from a total of 1,029 reported notifiable events in the past 12 months.

Figure 3 shows the number of notifiable events reported to WorkSafe by sector from April 2020 to March 2022.

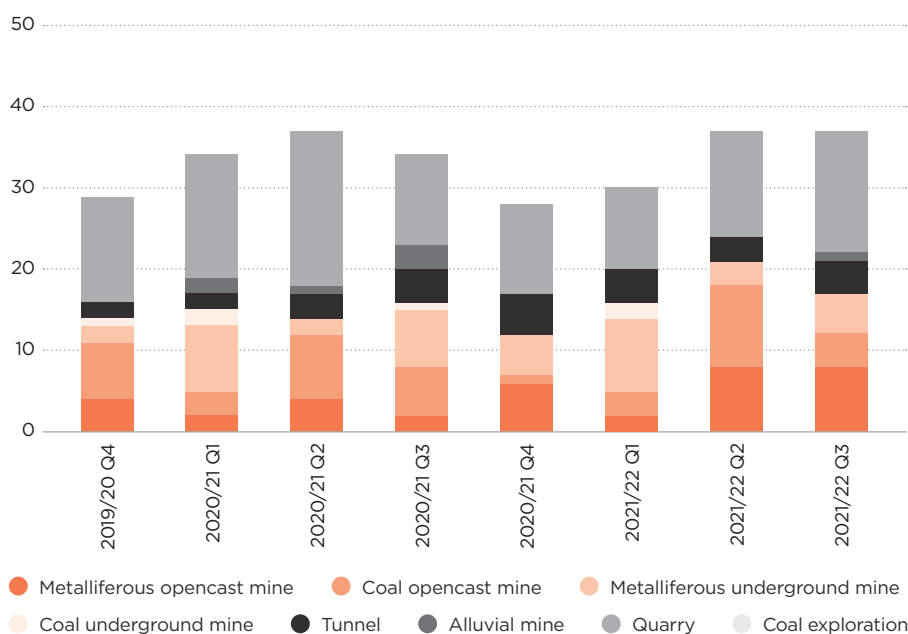


FIGURE 3: Notifiable events by sector

2.2 Injuries

Additional information about injuries is reported to WorkSafe for mining and tunnelling operations in the form of Quarterly Reports and Records of Notifiable Events under Schedules 6 and 8 of the Regulations. Figure 4 shows the number of injuries by injury type reported to WorkSafe by the mining and tunnelling sectors from July 2019 to March 2022. 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 TRIFR is 1.5. 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.

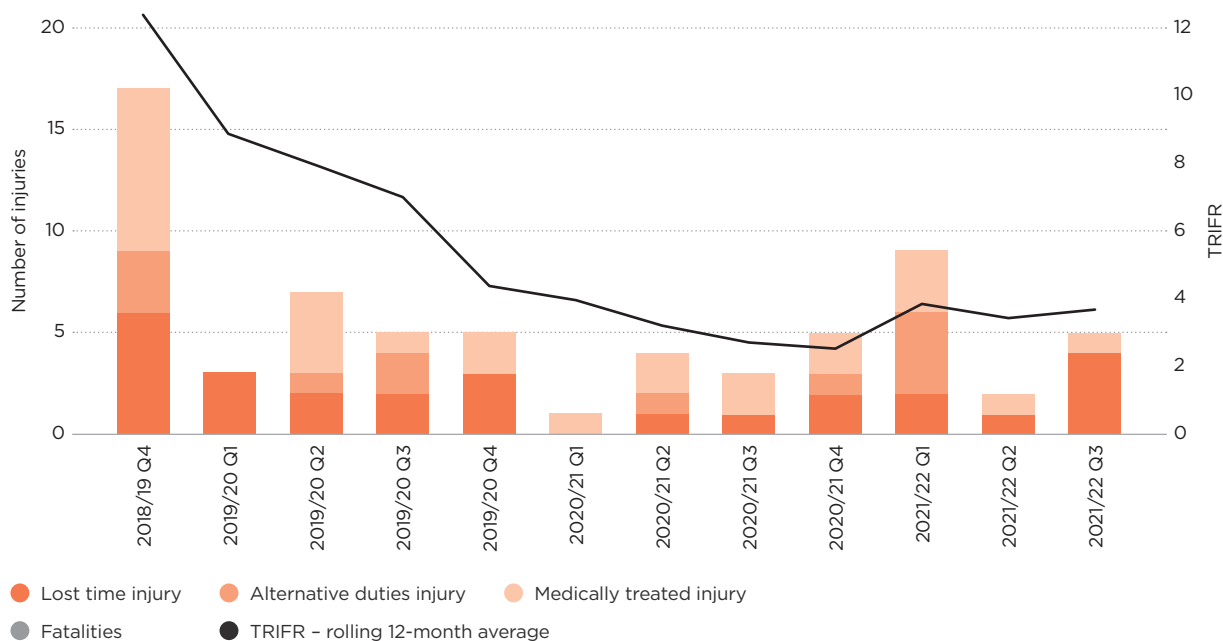


FIGURE 4: TRIFR - mines and tunnels

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 5 and 6 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 April 2019 to July 2021. 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 April 2019 and July 2021 was over \$22,400 per injury.



FIGURE 5: Number of injuries resulting in more than a week away from work

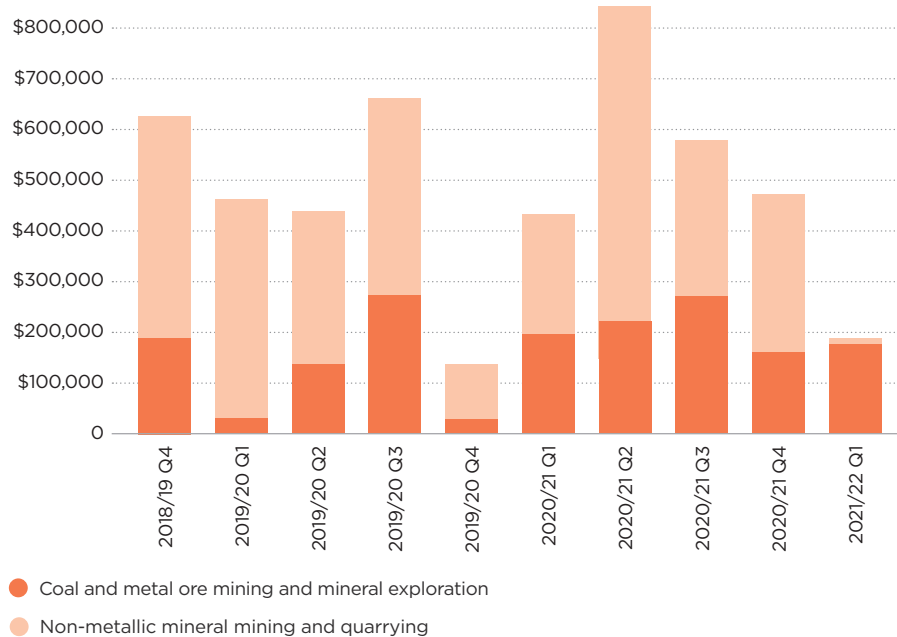


FIGURE 6: Sum of claims cost (excluding GST) for injuries resulting in more than a week away from work

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 eight month lag applied to the data to allow time for the claim information to stabilise, so data for the past two quarters 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

Figures 7 and 8 show the notifiable event categories for events notified to WorkSafe in the previous 12 months, by the mining and tunnelling sectors and the quarrying and alluvial mining sectors, respectively. The data shows that 57 percent of notifiable events in the mining and tunnelling sectors in the past 12 months have occurred in relation to vehicles and plant (28%), and fire, ignition, explosion or smoke (29%). These two categories are broken down in more detail in the following section. Sixty percent of notifiable events in the quarrying and alluvial mining sectors in the past 12 months involved the collapse, overturning, failure or malfunction of, or damage to plant (48%) and an implosion, explosion or fire (12%).

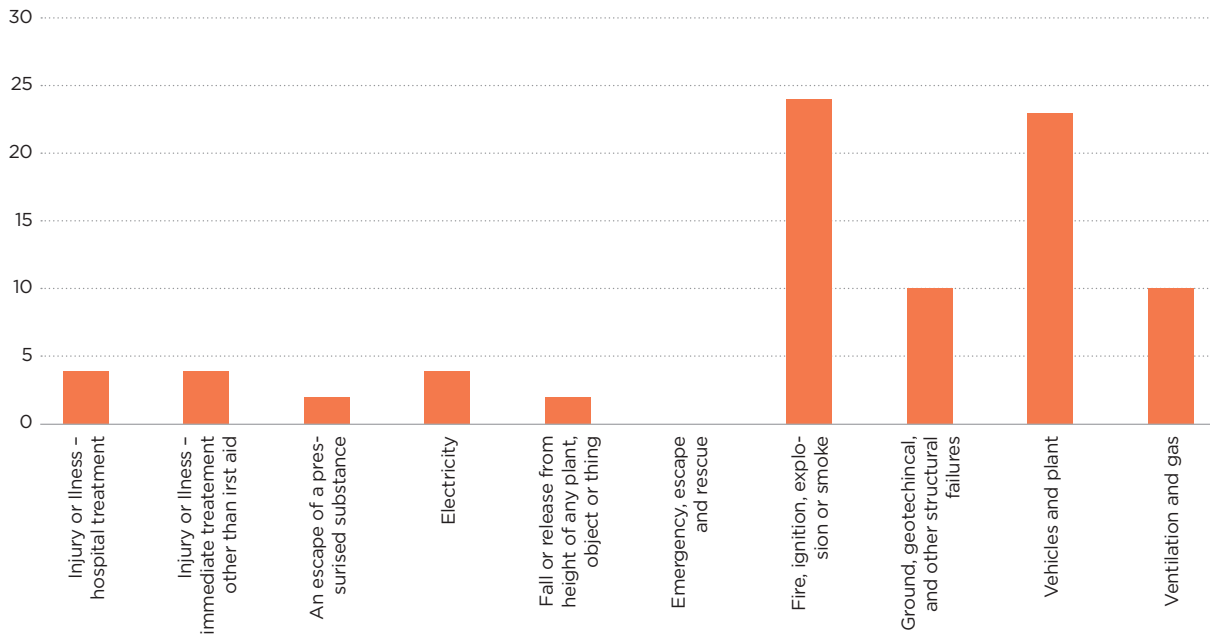


FIGURE 7: Mines and tunnels notifiable event categories for the previous 12 months

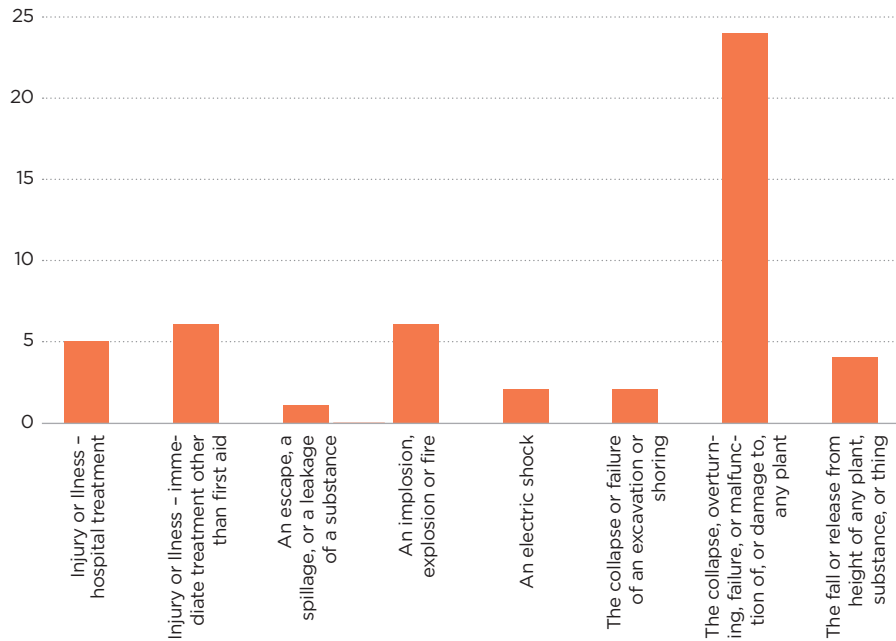


FIGURE 8: Quarries and alluvial mines notifiable event categories for the previous 12 months

2.4 Mine and tunnel 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 for mines and tunnels 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, 75% involve fires on plant, mobile plant or in buildings associated with mining or tunnelling activities, 8% involves spontaneous combustion, and 17% 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 (44%), overturning of mobile plant (39%), and unintended movement or brake failure (17%).

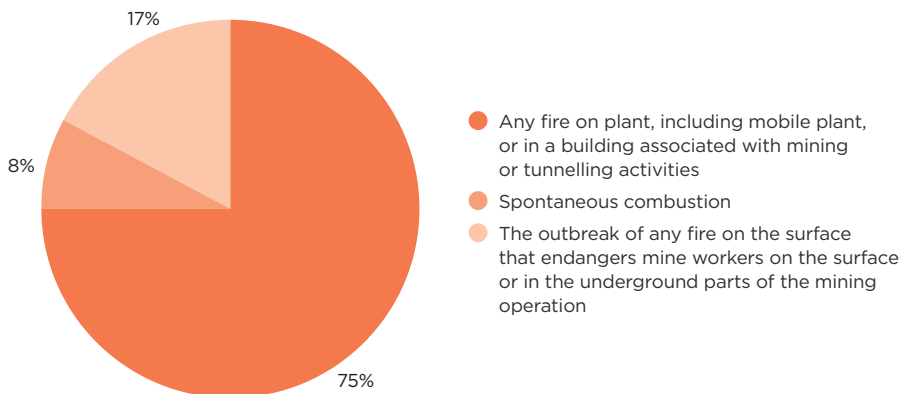


FIGURE 9: Fire, ignition, explosion or smoke-related notifiable event sub-categories

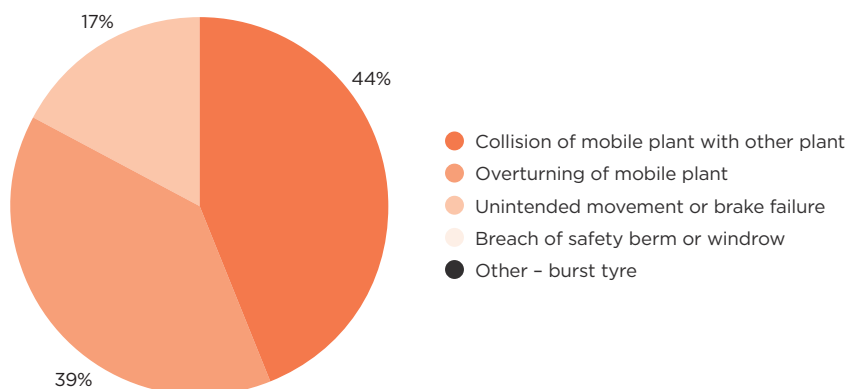


FIGURE 10:
Vehicles and plant-related notifiable event sub-categories

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 44% of operations in the past 12 months, and quarterly reports were submitted by 92% 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 3.9% 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.

2.5 Regulator comments

For the next few quarters WorkSafe will comment on some of the basic requirements of the amended regulations to complement the implementation process.

Health and Safety Management Systems (HSMS)

The development of HSMS for operations is a very important process. At any mining or tunnelling operation, the SSE has the responsibility of developing, documenting, implementing and maintaining the HSMS. The new regulations retain this responsibility for sites requiring an SSE, but for quarries and alluvial mines the responsibility will be on the 'responsible person', which will be the quarry operator or alluvial mine operator. Regardless of who is responsible, all sites will need the HSMS to be documented, and the process to develop it is the same and detailed in Part 3 of the regulations.

Quarries and alluvial mines will require a compliant HSMS to be in place by 18 July 2023. So, the development or updating of the HSMS should be a priority for those operations over the next 12 months.

The regulations will require the responsible person to conduct a Hazard Identification process (previously referred to as a risk appraisal). This process should be systematic – or in plain English should be organised and thoroughly

work through all the things on the site that could potentially cause harm to a person. The process should consider the work processes, machinery and plant, physical site characteristics, location and interaction of other persons etc.

Once the hazards have been identified, the responsible person should ensure that all hazards are risk assessed and that adequate controls are developed and implemented to ensure the safety and health of workers and others.

Some of the things that the HSMS is required to contain includes: the health and safety policy, a description of hazard identification and risk assessment processes, the nature of health and safety reporting systems, systems and processes to manage and control risks - including responses to increasing or changing risks, roles and responsibilities, required competency of all workers, auditing and monitoring requirements, PHMPs and PCPs (where required), and inspection and monitoring requirements for the site.

The HSMS should be proportionate to the size and complexity of the site and the types of risks and hazards present. Generally smaller sites would require a less complex HSMS, but where there are significant risks present, the smaller site will have to develop an adequate system. So, in all circumstances a HSMS must address all of the risks.

Another requirement for the development of the HSMS is to ensure that workers and their representatives are truly engaged in the development process. Workers from all levels need to be consulted with and actively participate in risk assessments, development of controls and SOPs.

The system must be implemented and reviewed on a regular basis. And if any notifiable event occurs or significant changes are made, the HSMS must be reviewed and amended as required. Some events will trigger detailed investigation, and it is important to also involve a good cross section of workers in these investigations.

The HSMS should be a living, continuously improving, documented system that is well understood by all of the workforce. All changes should be talked about and refreshers on the site requirements should be regularly held.

The system must be easily understood, and instructions or requirements should be plainly stated, considering the ability of those workers to understand, including language and literacy levels.

All contractors on a site should be considered the same as any other worker and must be made aware of all relevant HSMS matters on the site to ensure their safety and the safety of the permanent workers.

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 - 2021/22 Q3

Table 5 provides a summary of high potential incidents notified to WorkSafe in Q3 2021/22. The summaries are an abridged version from the operator's notification report.

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Jan 22	ADT traveling down a road went into a left-hand corner loaded, and the tray has tipped onto its side with the cab remaining upright. The incident occurred while hauling on a main arterial road. There was no injury to the operator.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Jan 22	Mine workers uncoupled a victaulic fitting connecting a rigid steel pipe on the shaft wall with a flexible mine hose. The compressed air line was charged with compressed air and there was an unplanned release of stored energy when the coupling released. No Injury Incident.	<ul style="list-style-type: none"> - Stored energy - Isolation - Job planning - Risk assessment - Supervision - Training
Jan 22	A 30t excavator was placing concrete drainage liners into a drainage channel. The excavator tracked forward to pick up pre-cast concrete channel, then slewed around and sat the channel on top of another. Channel then slid off bottom channel and the shift in load pulled the excavator over on to its side.	<ul style="list-style-type: none"> - Job planning - Equipment selection - Risk assessment - Supervision - Training
Jan 22	The truck driver was carting face rock off the top bench to the stockpile using an ADT. They reversed onto the stockpile to tip off the load of rock. The truck reached uneven ground and the tray of the truck tipped over. This resulted in the nose of the cab being pushed into the ground. The cab of the truck did not tip over and no person was hurt.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Jan 22	A call was received from the Council that cattle had gotten into the Quarry. A staff member who was in the area carrying out work went to check the Quarry. The worker was driving a 5T Isuzu flat deck tip truck and entered the quarry, drove above the stripped Quarry shelves to the back of the quarry to check for cattle. The road the truck was on had been graded and was sloped towards the bench face. Due to recent rain, there was some surface mud on the road that caused the truck to become stuck. A loader is kept at the quarry for loading trucks, and the worker has retrieved the loader, and using a 6-meter length of 20mm diameter natural fiber rope, has tried to tow the truck out of the mud. The worker has tied the truck to the loader, put tension on the rope and then gone back to the truck to disengage the brake and ensure the truck was in neutral. They then went back to the loader and tried to tow the unmanned truck out. The force has caused the rope to snap and resulted in the unmanned truck rolling backwards approximately 25m down the quarry accessway and over the prepared face. The truck has fallen approximately 6m and come to rest on its cab.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Jan 22	The ADT trailer tyre has rolled on the rim and put the trailer into the bund, tipping the bin onto the road. The cab stayed upright, and no injuries occurred.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Equipment maintenance - Job planning - Risk assessment - Supervision - Training
Jan 22	The loader operator parked the loader up to wash the windows, they grounded the bucket then the loader moved.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Jan 22	A loader operator lifted a load in the bucket, whilst turning and the loader rolled over onto its side.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Jan 22	Driver of truck and trailer unit exiting an area after being loaded with fill, on approach to corner at top of haul road, the unit jackknifed and truck unit rolled.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Jan 22	Excavator contacted HV powerline.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Electricity - Job planning - Risk assessment - Supervision - Training
Jan 22	Developed into historical mine workings. Ground has failed in the left-hand shoulder.	<ul style="list-style-type: none"> - Ground or strata - Old workings, voids - Job planning - Risk assessment
Feb 22	Mining above underground workings, excavator was loading a truck when the ground collapsed below Pos 3,4 tyres allowing those tyres to fall into void.	<ul style="list-style-type: none"> - Ground or strata - Old workings, voids - Job planning - Risk assessment
Feb 22	While removing the loader engine from the engine bay (utilising an overhead crane and spreader bar) an electrical arc/flash has been spotted by the maintenance team at the spreader bar. No person was injured and the crane was isolated immediately following the incident.	<ul style="list-style-type: none"> - Electricity - Lifting - Job planning - Risk assessment - Supervision
Feb 22	Whilst refueling an underground loader some fuel has sprayed on the hot exhaust components of the machine causing a flame. The AFFF was initiated, and two fire extinguishers were applied, and put out the flame. No injuries were sustained due to the incident.	<ul style="list-style-type: none"> - Fire or explosion - Equipment maintenance - Emergency management
Feb 22	All Terrain Dump truck lost control and has rolled onto its cab. No injury to operator.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Feb 22	An operator was involved with setting up the final stage concrete arch form liner. As part of this process a series of steel wedges were being used as packing to jack this formwork to the correct position. To reach the required height of packing a short section of 16mm threaded rod had been placed on top of several tapered wedges. As the jacking with the hydraulic ram started the injured person (IP) was in the location of the packing although the exact reason for them being there has not yet been established. At this moment the section of threaded bar ejected from the packing striking the IP across the nose causing a laceration to the bridge of their nose. The jacking was stopped immediately the treatment was given to the IP. As a precaution i.e. the first responders treated it appropriately as potentially a serious head injury, the IP was stretchered to surface where they were transported to hospital via ambulance for a thorough check-up.	<ul style="list-style-type: none"> - Job planning - Risk assessment - Supervision - Training
Feb 22	At the beginning of the shift operator 1 was checking over the bulldozer before starting the shift, operator 2 was accompanying them. Standing halfway up the rear of the bull blade, operator 1 slipped and fell contacting their head, shoulder, and hip with the machine before landing on the ground. The approximate fall was 1m from the ground. The operator was taken to the local Accident and medical center with a suspected concussion. It has been found that they have a concussion and bruising of the hip.	<ul style="list-style-type: none"> - Fall from height - Job planning - Risk assessment - Supervision - Training

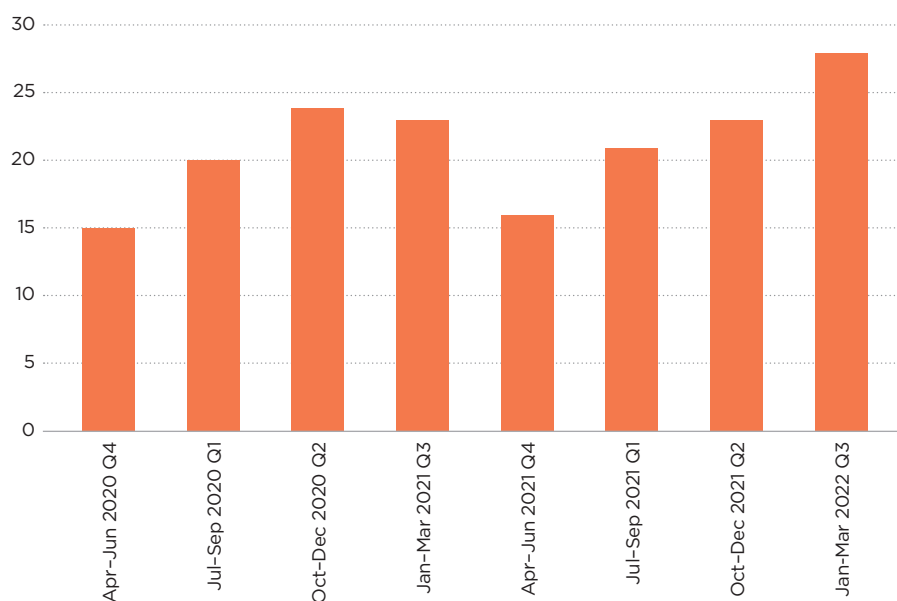
INCIDENT DATE	SUMMARY	CONSIDERATIONS
Feb 22	Experienced Operator was driving an ADT, carting material from the Spillway to the base of the Dump. They were on their twenty-seventh load to that dump. They reversed up to the tip to dump the load on level ground and standing approximately 1m off the windrow and previously dumped load. They placed the ADT in neutral, applied the park brake and started to lift the load. The deck was raised approximately 300mm when the rear of the ADT Deck tipped over to the left settling on a previously dumped load. The cab stayed upright. There was no injury to the Operator and no damage to the ADT.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Equipment maintenance - Job planning - Risk assessment - Supervision - Training
Mar 22	No injury, tray of ADT dumper turned on its side.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Mar 22	LV roll over incident occurred at the end of day shift when one of the crew were driving back to the office buildings. The driver swerved to avoid sheep that were on the road, ran up the side of the road and rolled-over. The driver was wearing their seatbelt and un-injured.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Mar 22	A customer's truck and trailer was heading out of the quarry, heading down to the weighbridge. The truck driver was looking out of the right-hand side at a 771 tipping off at the crushing plant. The driver didn't see there was a loader that crossed the haul road to load the pugmill bins, and collided with the rear of the counterweight. The loader operator thought the truck operator had seen him.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Positive communications - Job planning - Risk assessment - Supervision - Training
Mar 22	Machine had become stuck in awkward position/location and operators commenced recovery. During recovery machine overturned in work area. Driver was inside cab. No Injury.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Emergency management - Risk assessment - Supervision - Training
Mar 22	During construction on a new Haul Ramp, an ADT has reversed out after being loaded. It has reversed in a wide arc to maintain its stability. As the operator has been looking in a mirror, the opposite rear wheels have climbed a small pile of gravel causing the truck body to tip over.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Mar 22	Operator was using a 20-ton excavator with a rock breaker attachment to break out hard rock. A rock has become lodged in between the excavator track and track frame. The operator has placed the rock breaker pick on the ground to lift the track so they could clear the rock from the track. As the weight started to be removed from the excavator track the track has slipped sideways along a lip formed where hard rock meets weathered material. The excavator has slumped sideways when this happened and slowly rolled over on to its side.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training
Mar 22	Workshop incident - welding contractor burned by slag during gouging on an excavator. Initially assessed as minor injury but has progressed. On third medical review - assessed as third-degree burns.	<ul style="list-style-type: none"> - Welding - Contractor management - Provision of appropriate PPE - Job planning - Risk assessment - Supervision - Training

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Mar 22	Dump truck reversing towards stationary digger to load quarry feed, dump truck operator did not hear horn to stop, resulting in back of dumper hitting cab causing damage.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Positive communications - Job planning - Risk assessment - Supervision - Training
Mar 22	A locomotive being operated during shunting operations has made contact with the backstop of the rail, designed to prevent a locomotive or rolling stock going beyond that point. No injury.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Equipment Design - Job planning - Risk assessment - Supervision - Training
Mar 22	An ADT travelling loaded towards the dozer to dump the load. The truck was travelling on flat ground and lost control when travelling around a load of material on the haul road. The tray of the ADT tipped onto the side. No person was injured in this event.	<ul style="list-style-type: none"> - Roads and vehicle operating areas - Job planning - Risk assessment - Supervision - Training

TABLE 5: High potential incidents - 2021/22 Q3

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

QUARTER	Q4 APR-JUN 2020	Q1 JUL-SEP 2020	Q2 OCT-DEC 2020	Q3 JAN-MAR 2021	Q4 APR-JUN 2021	Q1 JUL-SEP 2021	Q2 OCT-DEC 2021	Q3 JAN-MAR 2022	TOTAL PREVIOUS 12 MONTHS
Number of high potential incidents per quarter	15	20	24	23	16	21	23	28	88

TABLE 6: High potential incidents per quarter**FIGURE 11:** Number of high potential incidents per quarter

2.7 High potential incidents - investigation outcomes

High potential incidents involving ADTs

This quarter, the number of high potential incidents involving ADTs was eight (29% of all HPIs).

THE INCIDENTS

ADT traveling down a road went into a left-hand corner loaded, and the tray has tipped onto its side with the cab remaining upright. The incident occurred while hauling on a main arterial road. There was no injury to the operator.



The truck driver was carting face rock off the top bench to the stockpile using an ADT. They reversed onto the stockpile to tip off the load of rock. The truck reached uneven ground and the tray of the truck tipped over. This resulted in the nose of the cab being pushed into the ground. The cab of the truck did not tip over and no person was hurt.



The ADT trailer tyre has rolled on the rim and put the trailer into the bund, tipping the bin onto the road. The cab stayed upright, and no injuries occurred.

Note: No photograph of incident scene available, scene not preserved.



All Terrain Dump truck lost control and has rolled onto its cab. No injury to operator.



Experienced Operator was driving an ADT, carting material from the Spillway to the base of the Dump. They were on their twenty-seventh load to that dump. They reversed up to the tip to dump the load on level ground and standing approximately 1m off the windrow and previously dumped load. They placed the ADT in neutral, applied the park brake and started to lift the load. The deck was raised approximately 300mm when the rear of the ADT Deck tipped over to the left settling on a previously dumped load. The cab stayed upright. There was no injury to the Operator and no damage to the ADT.



No injury, tray of ADT dumper turned on its side.



During construction on a new Haul Ramp, an ADT has reversed out after being loaded. It has reversed in a wide arc to maintain its stability. As the operator has been looking in a mirror, the opposite rear wheels have climbed a small pile of gravel causing the truck body to tip over.



An ADT travelling loaded towards the dozer to dump the load. The truck was travelling on flat ground and lost control when travelling around a load of material on the haul road. The tray of the ADT tipped onto the side. No person was injured in this event

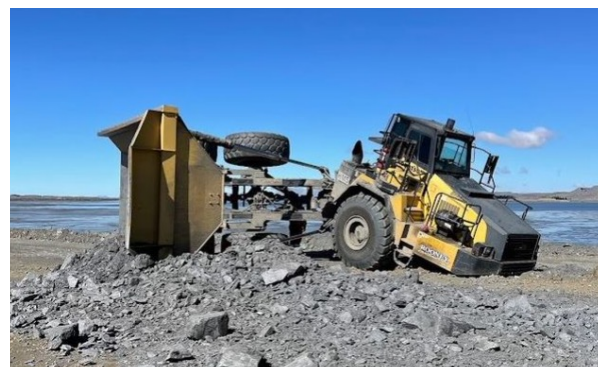


TABLE 7: High potential incident – ADT incidents

THE PCBU INVESTIGATIONS IDENTIFIED

Table 8 below summarises the findings from the PCBU investigations provided to WorkSafe, as well as those notifiable incidents where the scene was preserved as required by HSWA.

INCIDENT CAUSES/FACTORS FROM OPERATOR'S INITIAL INVESTIGATION REPORT PROVIDED TO WORKSAFE	CORRECTIVE ACTIONS IDENTIFIED BY THE OPERATOR	SCENE PRESERVED
1. - Operator behaviour: speed, inattention/distraction, complacency - Unsuitable road layout/speed limit set	- Redo training and assessment - Review management plan - Conduct safe work observations - Review road layout, check roads constructed to design	Yes
2. - Uneven ground - Driver error	- Revise plant risk assessment - Provide additional training - Revise SOP	Yes
3. - Tyre pressure - Bunded edge not steep enough	- Bund edges to be made more steep - Tyre pressure checks at service intervals	No
4. Investigation report not yet provided to WorkSafe	Investigation report not yet provided to WorkSafe	Yes
5. - Failed mechanical part: snubber block - Prestart inspection did not identify failed part: concealed	- Check other ADTs for similar defect - Check this component each month by experienced person - Toolbox talk - Re-induction to refresh emergency procedures, scene clearance requirements and reporting of incidents.	No
6. - ADT operator reversed up the stockpile to tip off the material (was attempting to save loader time pushing up the chip feed material) - ADT operator did not follow procedures (last competence check completed in 2019) - ADT operator made a significant error of judgement that allowed this incident to happen	- Reinforce to all employees the procedure for operating an ADT - Reassessment of mobile plant operators on ADTs to be completed/updated - Plant induction to be completed on contractor's gear at the site	No
7. - Staff failing to communicate, not developing working procedure as it evolves and changes - Failure to use radios to communicate about changes in machine movements and loading locations - Closer observation of work on site required	- On site communication on importance of planning and communicating - All ADTs to drive forwards after being loaded	Yes
8. - Road too narrow due to stockpile placement - Uneven driving surface - No speed signage in place - Speed limit of 60kph not suited to conditions at the time - Previous warnings for speed to operator - Poor hazard ID training for operator	- Additional operator training, new VOC - Audit contractor training process - Speed limits review - Review road layout, increase width	Yes

TABLE 8: ADT incidents – PCBU investigation findings

REGULATOR COMMENTS AND RECOMMENDATIONS

Root causes identified within the incident investigations often center around the ADT operator's actions. When focusing on actions or inactions of the operator it is possible to miss valuable learnings with regards to the wider health and safety management system.

ADT operators will inevitably make mistakes, and it is important that when predictable minor errors of judgement are made that the consequences are mitigated to ensure that no harm occurs.

Within an investigation report it is important to record all possible corrective actions that could be implemented. These corrective actions should be considered using the hierarchy of controls (elimination, engineering, substitution etc). Topics such as fit for purpose equipment should be addressed – is an ADT the most appropriate truck for the job (substitution)? A possible engineering control could be the installation or hiring of ADTs with inclinometers fitted. Administrative controls i.e., procedures are towards the bottom end of the hierarchy in terms of their effectiveness.

ADT rollovers are amongst the most common notifiable incidents seen on New Zealand Extractive sites. It is imperative that effective corrective actions are implemented. PCBUs should review all corrective actions that have been implemented to confirm they're having the desired outcome and are effective. If it is found that the corrective actions are not effectively at preventing reoccurrence of the incident, then further actions should be implemented.

WorkSafe intends to dive deeper into vehicle incidents (including events involving ADT's) going forward. We will often require a set of further information from operators post the notification. Our intention is to deepen the knowledge/database to further narrow down the common causal factors present in these events. This information will be included in our quarterly report.



3.0

The regulator

IN THIS SECTION:

- 3.1 Our activities
- 3.2 Assessments
- 3.3 Enforcements

3.1 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.

3.2 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 Q3 2021/22 by sector.

		ASSESSMENTS	MINE	TUNNEL	ALLUVIAL MINE	QUARRY
Preventative	Site-based	Targeted assessments				
		Regulatory compliance assessments				
		Site inspections	8	1	5	68
		Targeted inspections	1			
	Desk-based	PHMP/PCP review		22		
		Mine plan review	9	3		
		High risk activity	1			
COVID-19 assessment						
Reactive	Site-based	Concerns - inspection			1	2
		Notifiable events - inspection	8	1		9
	Desk-based	Concerns - desk-based				
		Notifiable event - desk-based	8	2		1

TABLE 9: Proactive and reactive site and desk based assessments conducted in Q3 2021/22

Figure 12 shows the number of proactive and reactive site- and desk-based assessments undertaken by the regulator in Q3 2021/22. This quarter 70% of our activities were site-based, and 79% of activities were proactive.

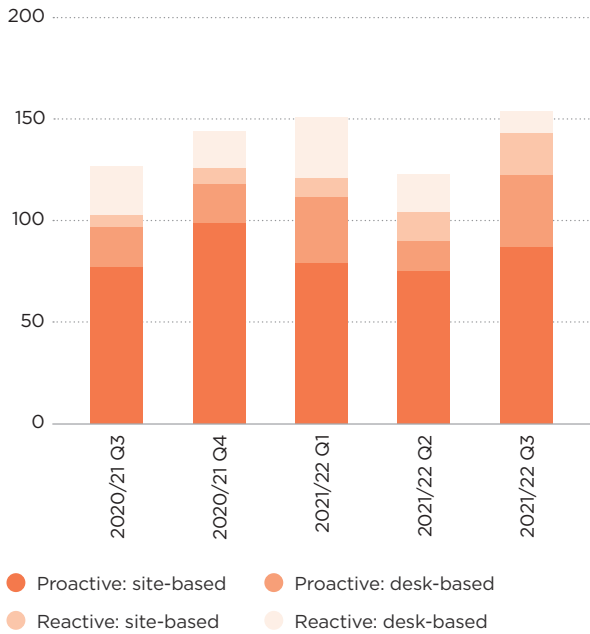


FIGURE 12:
Proactive and reactive site and desk-based assessments

Figure 13 shows the number of assessments undertaken by the regulator in Q3 2021/22 by sector. This quarter, 52% of our assessments were for quarries, 23% for mines, 21% for tunnels and 4% for alluvial mines.

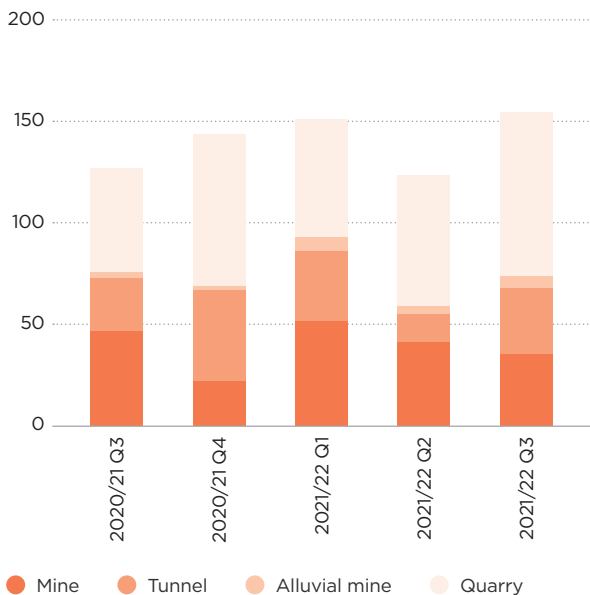


FIGURE 13:
Assessments by sector

3.3 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 2021/22 by notice type and by sector. This quarter, a total of 227 enforcement actions were issued. Of those, 6% of were prohibition notices, 25% were improvement notices, 69% were directives and 0% were sustained compliance letters. The majority of the enforcement actions were issued to the tunnelling (13%) and quarrying (68%) sectors.

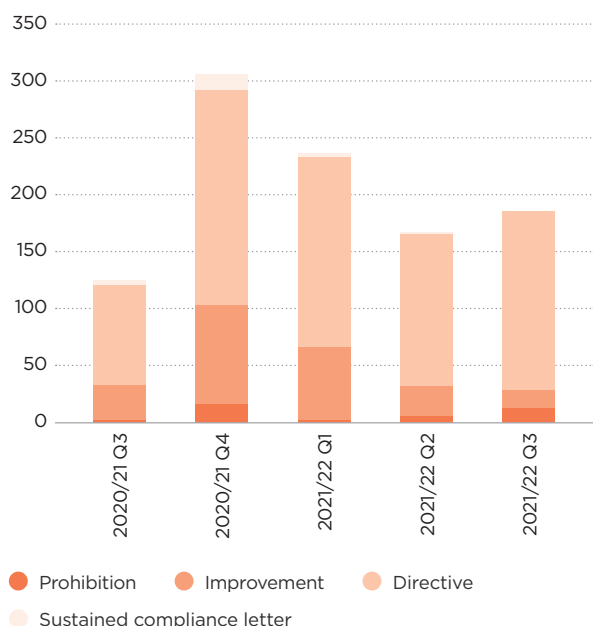


FIGURE 14:
Enforcement actions issued by type

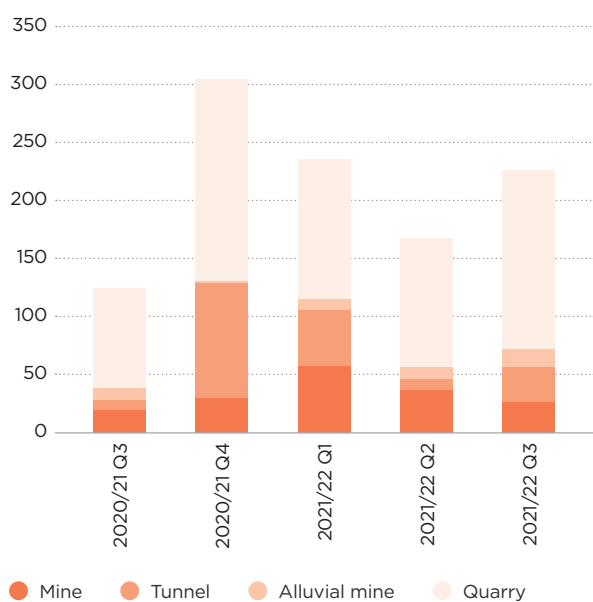


FIGURE 15:
Enforcement actions issued by sector

Figure 16 shows the number of enforcement actions issued in Q3 2021/22 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 (26%) and guarding (21%).

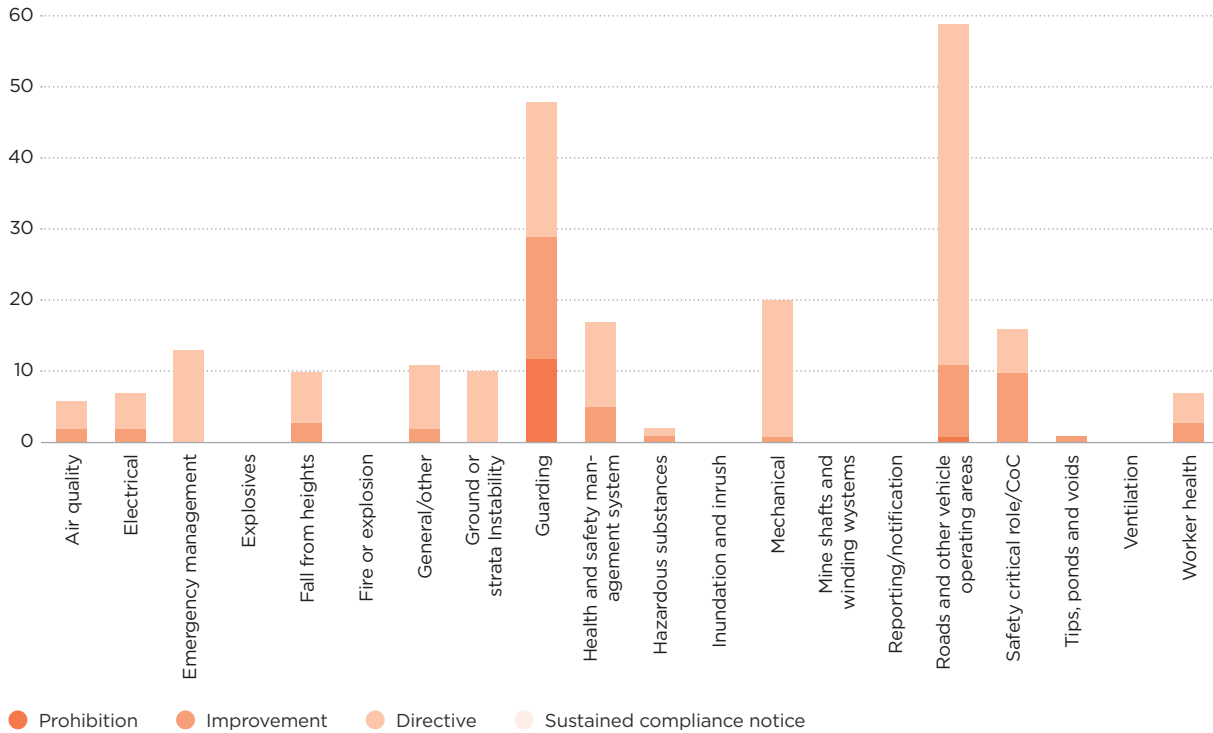


FIGURE 16: Enforcement actions issued by category 2021/22 Q3

Regulator activity comment

Activity and enforcement remain consistent in the focus areas of “Roads and Other Vehicle Operating Areas” and “Guarding”. The road-related enforcement reflects our concern around the number of notifiable incidents occurring in this category and will likely increase as we begin to dive deeper into common causal factors of these types of incidents this year.

It is disappointing that guarding is still a common area of non-compliance on site visits. Operators have had considerable time to get plant up to a good condition, and the requirement to adequately guard plant and equipment is not new or related to any new regulatory requirements.

WorkSafe has set the workplan for the coming year. Our primary focus will be on introduction of the new regulations and educating operators on the requirements. We will maintain similar inspection numbers while inspecting the higher risk sites this year as a priority. These visits should assist operators to determine compliance gaps with the new legislation.

The inspection plan also takes into account our intention to attend as many sites as possible sites post a notifiable event.

Going forward, WorkSafe will also take a responsible attitude to carbon emissions, and this year’s plan has been developed to eliminate non-essential travel. This has largely not affected planned inspection numbers, although the low carbon emission targets may result in sites being attended by the local inspectors more frequently.

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: July 2022

PO Box 165, Wellington 6140, New Zealand

worksafe.govt.nz



Except for the logos of WorkSafe, this copyright work is licensed under a Creative Commons Attribution-Non-commercial 3.0 NZ licence.

To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc/3.0/nz>

In essence, you are free to copy, communicate and adapt the work for non-commercial purposes, as long as you attribute the work to WorkSafe and abide by the other licence terms.

