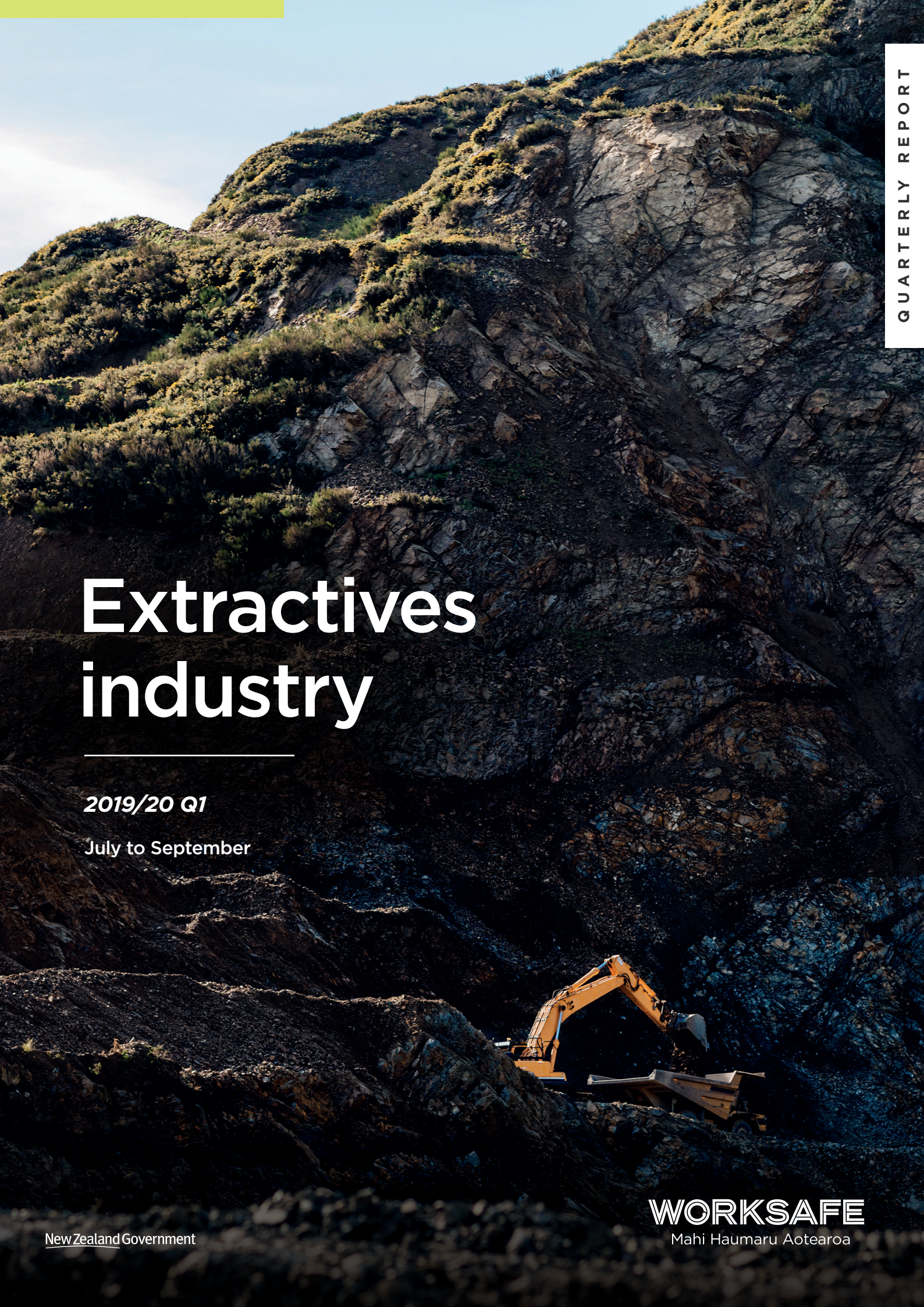
QUARTERLY REPORT

Extractives industry

2019/20 Q1

July to September



New Zealand Government

WORKSAFE
Mahi Haumaru 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, but of businesses, workers and a wide range of other players in the health and safety system.

Why have a quarterly report?

The extractives team at WorkSafe receives a wealth of information from industry and from its own work with the sector. This information is critical in helping us determine where we should be focusing our regulatory approach.

Having it locked away at the regulator's offices serves us, but there's an additional, significant, value to this data.

It's an information bank that we want you to have too, so that you can better manage your work and your obligations under the Health and Safety at Work Act 2015 (the Act). This quarterly report is our first 'report-back' to industry and it covers a multitude of measures of industry performance.

Knowing what is happening in the sector is as important to you as it is to us – data is the basis on which we can all develop plans to better protect the health and safety of workers throughout the sector.

Over time it will become a vital tool for us and for you in determining pressure points and trends in the extractives industry.

You are well aware that there are now mandatory reporting requirements to WorkSafe in the Act and also in the Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 (the Regulations). These reports are the source of information WorkSafe will use to report back to industry on performance. We will also include information that we gather during our assessments and our interactions with the sector.

WorkSafe identifies three critical areas – working smarter, targeting risk and working together – as essential to achieving transformation of our health and safety performance. The opportunity to gather and analyse data from all the extractives sectors is high value and will be a priority for us.

This quarterly report will assist us all to work smarter, target risk and work together by identifying where events are occurring and identifying where we should focus our resources.

Where possible we will use trending and additional analysis to alert early to any emerging trends. As this is the first report it is an early analysis of information. The data set will grow and trends will become more apparent in each subsequent quarter. The implementation of the amended regulations in 2020 will also provide an opportunity for significant improvement, with the inclusion of all quarries into the same reporting requirements as mines and tunnels.

We thank all of the operators who have provided information to WorkSafe in the form of quarterly reports and notifications, and hope the information provided in these reports is valuable to your future planning.

Paul Hunt
Chief Inspector Extractives

CONTENTS

tables

figures

1.0 Industry profile

IN THIS SECTION:

1.1 Operations

3

Metalliferous opencast mines
Includes one mine under care and maintenance, and one undertaking rehabilitation

22

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

6

Metalliferous underground mines
Includes two operating tourist mines

2

Coal underground mines
Includes one tourist mine under care and maintenance

4

Tunnels
Includes one tunnel that notified cessation in the quarter

3

Coal exploration
Intermittently operating

83

Alluvial mines
Number of mines that have been verified (78) or have notified of an Appointed Manager to WorkSafe (5)

Includes 2 iron sands mines

1,209

Quarries
Number of quarries that have been verified (956) or have notified of an Appointed Manager to WorkSafe (253)

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 1,332 active operations in New Zealand as at the end of September 2019.

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 (ie visited by WorkSafe), or have notified WorkSafe of an Appointed Manager.

There has been a general decline in the significance of coal mining in New Zealand for some time. There is no longer any actively mining underground coal mine in New Zealand and total coal mine output is decreasing.

The next notable change being forecast is a considerable increase of workers involved in tunnelling operations, as Auckland commences two significant infrastructure projects. There were four notified and operating tunnels this quarter.

1.2 People

462

Metalliferous opencast mines

347 FTEs employed by mine operators and 115 FTEs employed by contractors

859

Coal opencast mines

676 FTEs employed by mine operators and 182 FTEs employed by contractors

606

Metalliferous underground mines

430 FTEs employed by mine operators and 176 FTEs employed by contractors

25

Coal underground mines

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

54

Tunnels

32 FTEs employed by mine operators and 21 FTEs employed by contractors

<1

Coal exploration

0.05 FTEs employed by mine operators

335

Alluvial mines

Number of workers is known for 39 of the 83 alluvial mines that are verified and/or have notified of an Appointed Manager

The total number of workers has been extrapolated for the remaining 44 operations

3,754

Quarries

Number of workers is known for 623 of the 1209 quarries that are verified and/or have notified of an Appointed Manager

The total number of workers has been extrapolated for the remaining 586 operations

Figure 1 shows the total hours worked by the mining and tunnelling sectors in Q1 2019/20. The hours are separated into Employees and Contractors.

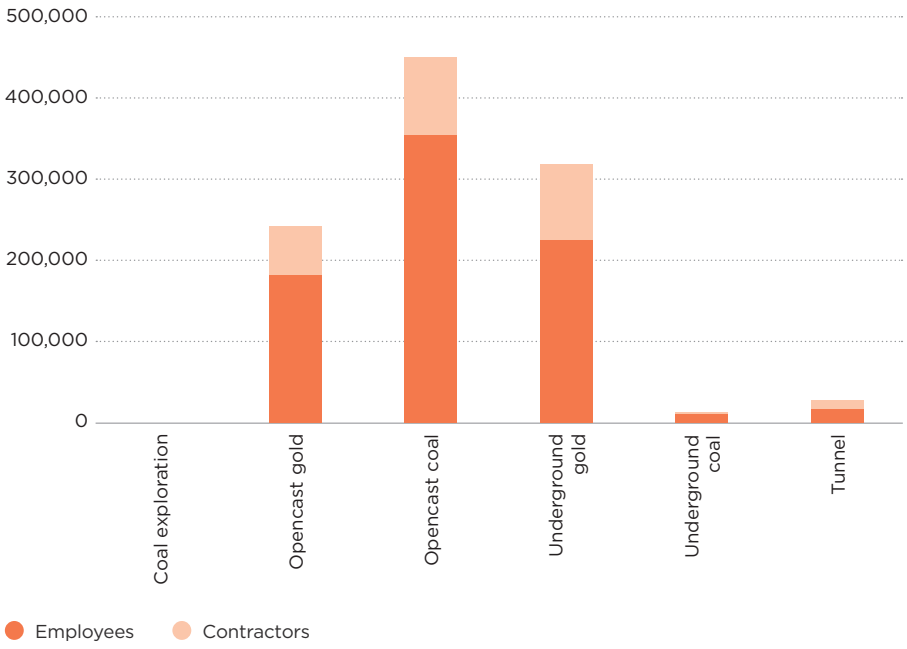


FIGURE 1:
Total hours worked by sector 2019/20 Q1

Figure 2 shows the number of Full Time Equivalents (FTEs) calculated from total hours worked for the mining and tunnelling sectors in Q1 2019/20. The hours are separated into Employees and Contractors.

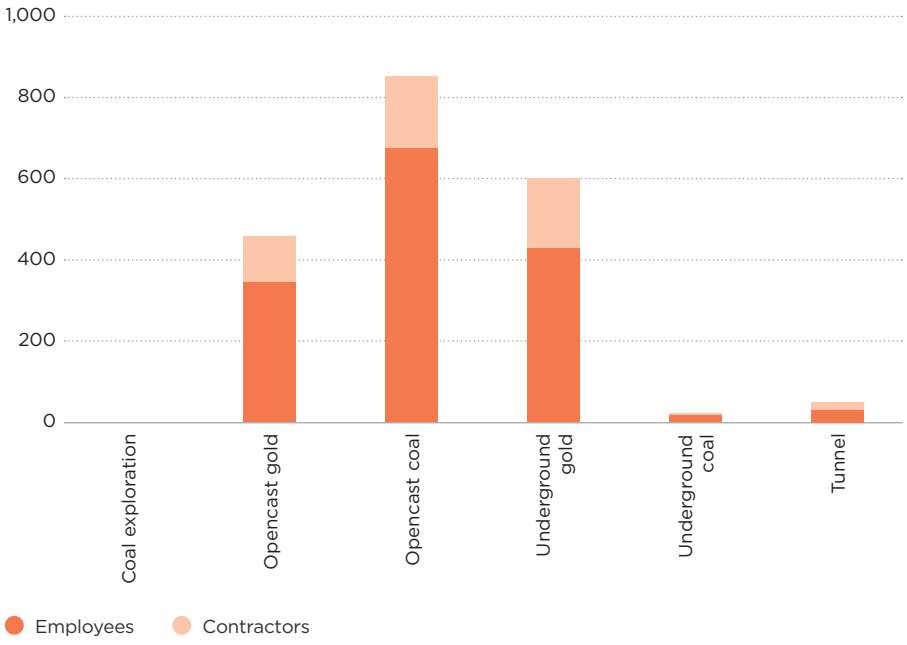


FIGURE 2:
Number of FTEs by sector 2019/20 Q1

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).

Table 1 provides a summary of the total number of CoCs issued by COC type since 2015, and the number of new COCs issued in Q1 2019/20.

COC TYPE	TOTAL NUMBER OF COCs ISSUED 2015 to September 2019	NUMBER OF COCs ISSUED Q1 July to September 2019
A Grade Quarry Manager	317	3
B Grade Quarry Manager	439	14
Lifetime Quarry CoCs (Estimated)	300	
A Grade Opencast Coal Mine Manager	71	
B Grade Opencast Coal Mine Manager	63	3
A Grade Tunnel Manager	31	
B Grade Tunnel Manager	64	2
Site Senior Executive	60	1
First Class Coal Mine Manager	17	
First Class Mine Manager	23	
Coal Mine Deputy	41	
Coal Mine Underviewer	33	
Mechanical Superintendent	23	2
Electrical Superintendent	17	2
Ventilation Officer	3	
Mine Surveyor	10	
Site Specific	0	
Winding Engine Driver	3	

TABLE 1: Certificates of Competence issued

Health and safety performance

IN THIS SECTION:

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 from July 2018 to September 2019 for mine and tunnels (Table 2) and quarries and alluvial mines (Table 3).

MINES AND TUNNELS	2018/19 Q1	2018/19 Q2	2018/19 Q3	2018/19 Q4	2019/20 Q1
Number of notifiable events	18	16	26	13	20
Number of operations that notified events	10	9	10	7	10

TABLE 2: Mines and tunnels – notifiable events and operations that notified events

18 individual mines and tunnels from a total of 40 reported notifiable events in the past 12 months.

QUARRIES AND ALLUVIAL MINES	2018/19 Q1	2018/19 Q2	2018/19 Q3	2018/19 Q4	2019/20 Q1
Number of notifiable events	13	9	23	9	22
Number of operations that notified events	12	9	21	9	20

TABLE 3: Quarries and alluvial mines – notifiable events and operations that notified events

51 individual quarries and alluvial mines from a total of 1292 reported notifiable events in the past 12 months.

Figure 3 shows the number of notifiable events reported to WorkSafe by sector from July 2018 to September 2019.

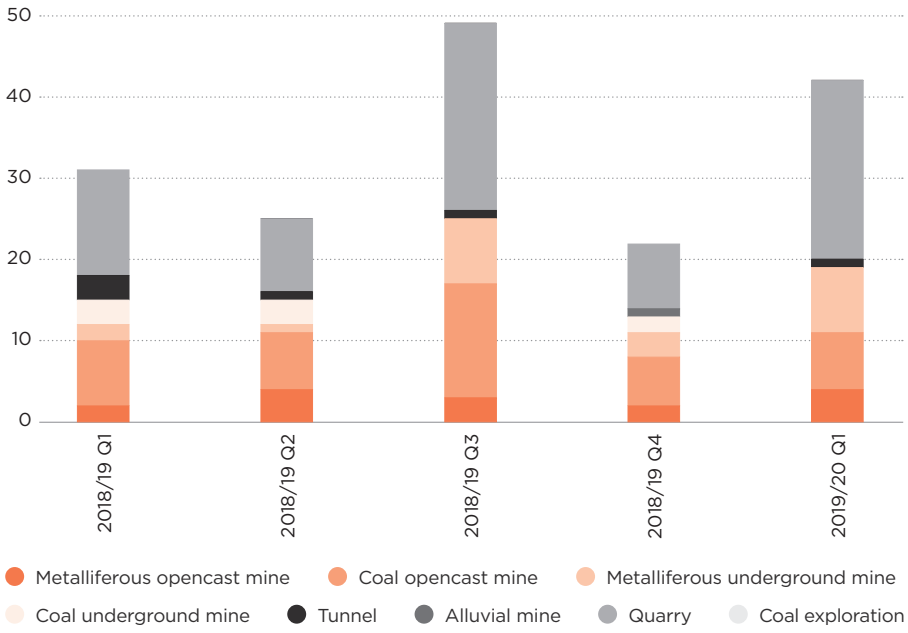


FIGURE 3: Notifiable events by sector

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 2017 to September 2019. 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.

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.

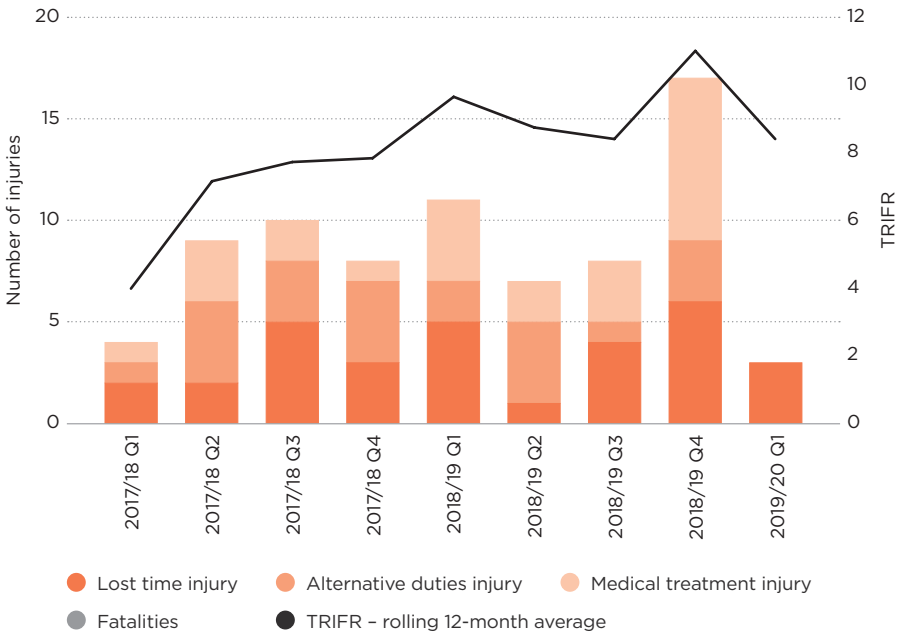


FIGURE 4: TRIFR – mines and tunnels

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 July 2017 to March 2019.

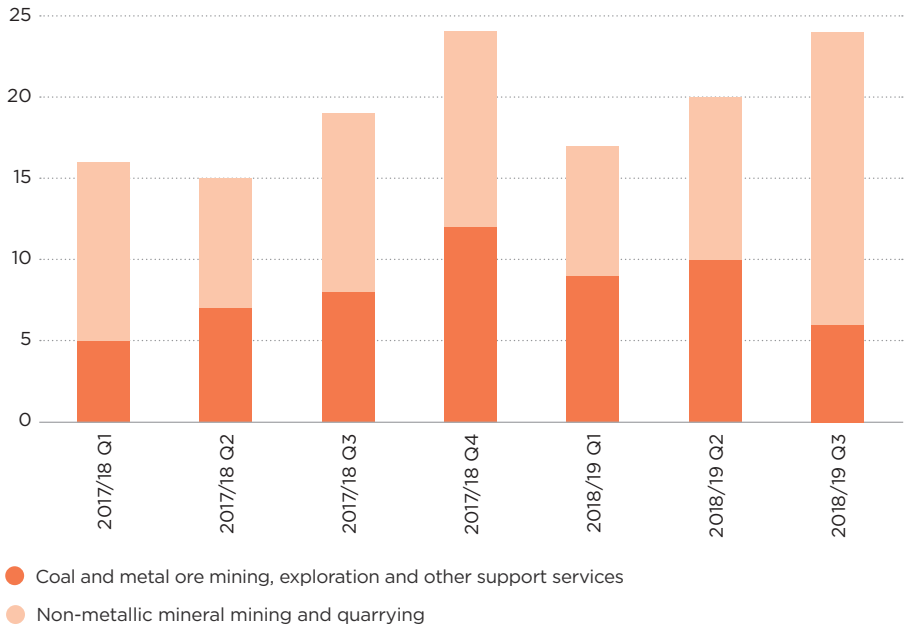


FIGURE 5:
Number of injuries resulting in more than a week away from work

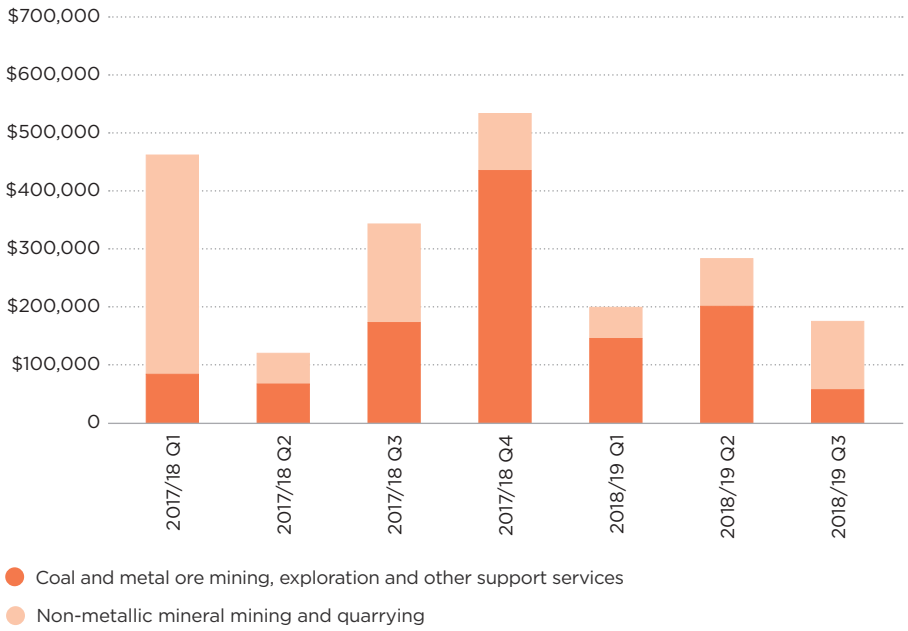


FIGURE 6:
Sum of claims cost (excluding GST) for injuries resulting in more than a week away from work

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 a seven 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 56 percent of notifiable events in the mining and tunnelling sectors in the past 12 months have occurred in relation to fire, ignition, explosion or smoke (28%) and vehicles and plant (28%). These two categories are broken down in more detail in the following section. Fifty-five percent of notifiable events in the the quarrying and alluvial mining sectors in the past 12 months involved the collapse, overturning, failure or malfunction of, or damage to plant.

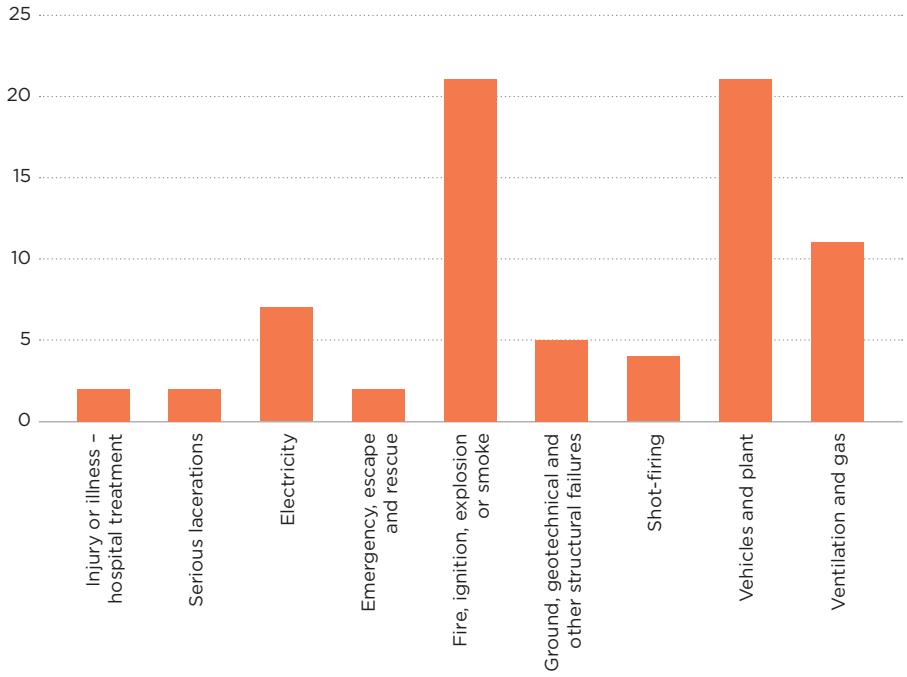


FIGURE 7: Mines and tunnels notifiable event categories for the previous 12 months

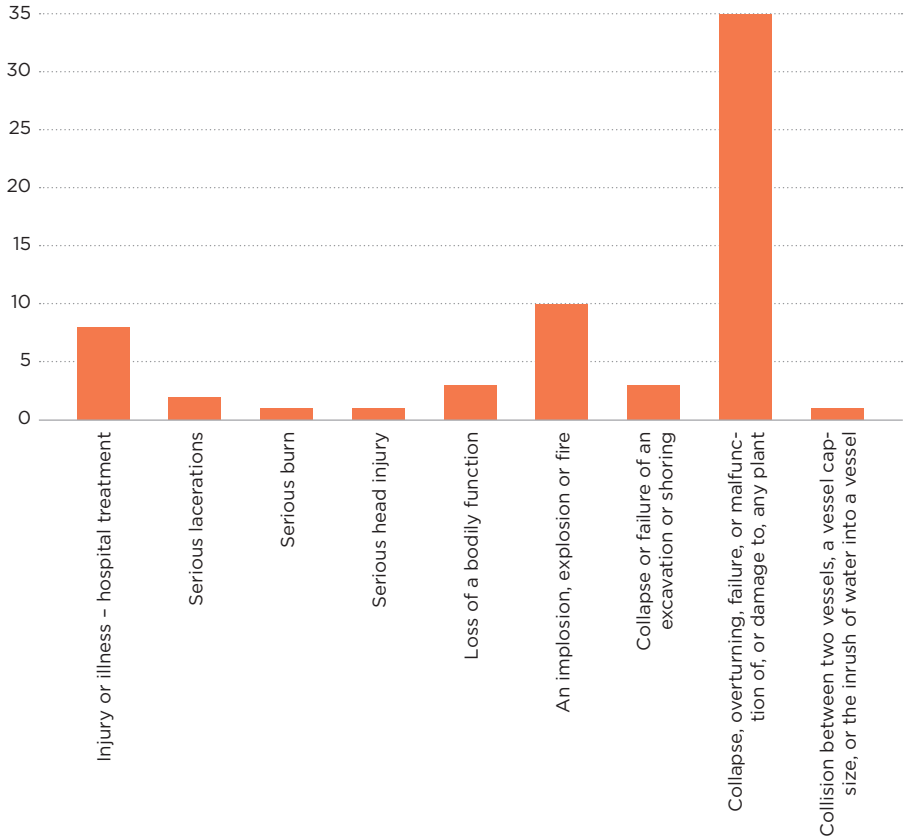


FIGURE 8: Quarries and alluvial mines notifiable event categories for the previous 12 months

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 into the corresponding Schedule 5 sub-categories. The data shows that for notifiable events related to fire, ignition, explosion or smoke, 76% involve fires on plant, mobile plant or in buildings associated with mining or tunnelling activities. The vehicle and plant-related notifiable events involve overturning of mobile plant (38%), unintended movement or brake failure (38%) or collision of mobile plant with other plant (19%).

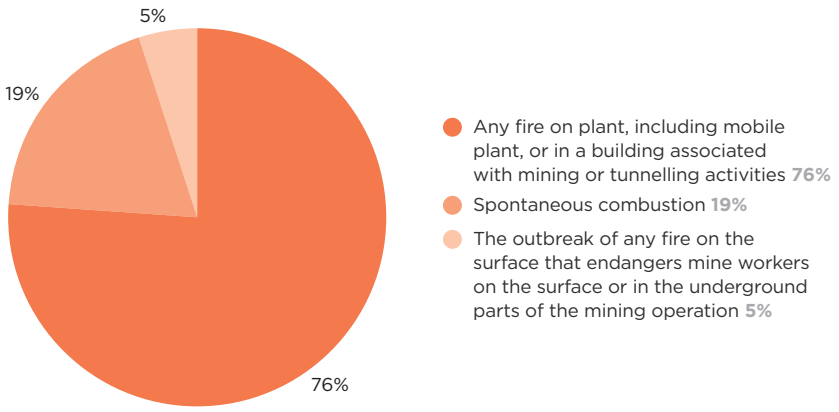


FIGURE 9: Fire, ignition, explosion or smoke-related notifiable event sub-categories

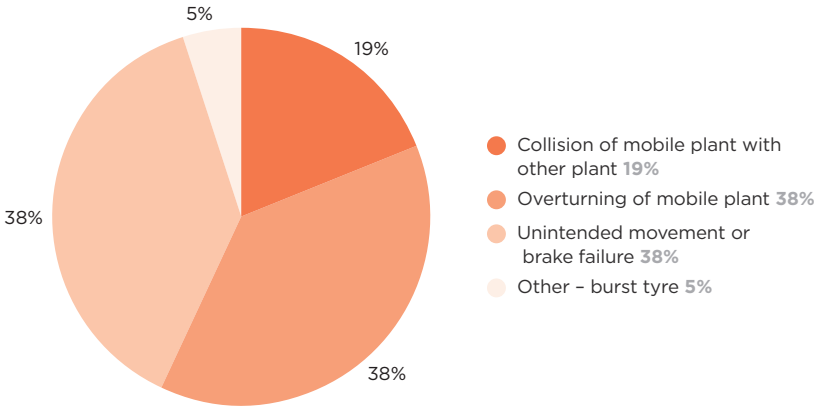


FIGURE 10: Vehicles and plant-related notifiable event sub-categories

2.5 Commentary

The data received from mining and tunnelling operations shows that notifiable event reports are being received from a high proportion of the operations, with operators reporting under Schedule 5 of the Regulations. The mining and tunnelling reporting is considered to be accurate and shows a series of high potential incidents and consistent reporting of medical or worse injuries. Larger operations report more frequently but 45% of the existing mines and tunnels have reported over the last year.

The quarry and alluvial mine reporting of notifiable events is from a much lower proportion of the sector and is likely to be less accurate. The quarry sector, which has approximately twice as many workers as the mining and tunnelling sector, notify a similar total number of events, with only 4% of operations reporting notifiable events in the past 12 months. When compared to SWIFT data on WAFW injuries, there is a higher proportion of injuries per notifiable event for quarries than for mines and tunnels. This could suggest under reporting of events in the quarry sector. Note that SWIFT data is not available for 6–7 months after quarterly reporting data is received by WorkSafe, so correlation of the injuries reported with SWIFT data will be a secondary analysis for this report. In general, more accurate reporting for the quarry sector is expected when the requirements for reporting under Schedules 5 and 8 are implemented for quarries.

The mining and tunnelling quarterly reporting is considered the most reliable data set, with a very high percentage of returns for the past two years. This data shows a current TRIFR of 8.6 which tells us that the frequency of injuries that require medical attention is high and also seems to have steadily increased for the past two years.

Over the last year there have been several incidents that have resulted in serious injuries, but most concerning is that there have been a number of events that could easily have been fatalities. Many of the serious incidents have involved mobile plant – either loss of control, interaction of vehicles with pedestrians, interaction of vehicle to vehicle, or significant mechanical failings or fires. There were also a number of falls from height, one of more than 4m, and several of which could have resulted in fatalities.

Industry should take note of the data which dispels any notion that the industry is improving and becoming safer. Over the last few years the data shows an increase of notifiable events and more injuries. That there have been no fatalities is a result of luck. There have been a number of events which resulted in significant injuries and also a series of events where all controls had failed and workers only avoided serious harm or death through good fortune.

2.6 Safety events of note

Table 4 provides a summary of serious notifiable events notified to WorkSafe in Q1 2019/20. In this first report, a sample of the 2018/19 serious notifiable events is also provided in table 5. The summaries are an abridged version from the operator's notification report.

SAFETY EVENTS OF NOTE – 2019/20 Q1		
Incident date	**Summary**	**Considerations**
July 2019	ADT rollover while reversing into stockpile. No injuries were sustained.	– Machinery selection – Training – Roads and operating surfaces – Traffic management plan
July 2019	Falling rock struck a maintenance worker while working on crusher. Injured hand and shoulder.	– Isolation – Maintenance
July 2019	Explosives were identified in a crusher – identified as old explosives.	– Explosives
Aug 2019	Collision of an excavator and dump truck.	– Traffic management
Aug 2019	Caterpillar Moxy rollover while operating at the tip head. No Injuries were sustained.	– Roads and other surfaces – Machinery selection – Training – Traffic management plan
Sep 2019	An ADT rollover occurred when a worker lost control of the ADT in wet road conditions. No injuries were sustained.	– Roads and other surfaces – Machinery selection – Training – Traffic management plan
Sep 2019	A worker fell 2m from conveyor while performing a screen change. The worker slipped and made contact with guarding and frame when falling, resulting in fractured rib and bruising.	– Working at heights

TABLE 4: Safety events of note – 2019/20 Q1

SAFETY EVENTS OF NOTE – JULY 2018 TO JUNE 2019		
Incident date	**Summary**	**Considerations**
July 2018	Two workers were working in the bell out in the bottom of the tunnel shaft. They had been lowered down into the shaft in a 2-man man-cage. Upon exiting, the man-cage was lifted approximately 4m up the shaft, and slewed to the side away from where the workers were to be working. The crane was switched off. Approximately 1 hour later the man-cage dropped to the bottom of the shaft. The workers were recovered from the shaft one at a time using the emergency rescue davit arm, and the scene was held. No injuries.	– Use of cranes: Mechanical requirements – Emergency response
July 2018	A sub-contractor worker fell 3m from a conveyor onto a concrete pad, resulting in bruising to spine.	– Working at heights Contractor management
Sept 2018	A worker fell 5m through grid mesh flooring. Worker sustained significant injuries and was transferred from an ambulance to a helicopter and taken to hospital.	– Working at heights
Oct 2018	Worker struck by detached drill mast while tramming to new location. Worker sustained significant injuries. Airlifted to hospital.	– Machinery selection – Introduction to site – Maintenance
Oct 2018	Rock fall – near miss for workers loading blast at bottom of pit. Evacuated and abandoned work for geotechnical assessment.	– Ground or strata instability

Incident date	Summary	Considerations
Nov 2018	Worker fell off digger tracks and landed on their side. Fractures of hip sockets.	– Working at heights – Access and egress from machinery
Jan 2019	Loader rollover. A loader with a full bucket rolled over while working on tip head.	– Machinery selection – Training
Jan 2019	Rollover of 25t dump truck. No injuries.	– Machinery selection – Training – Operating surfaces
Feb 2019	ADT tray roll at quarry. Reversing on top of a stockpile and went up the windrow causing rollover.	– Training – Machinery selection – Operating surfaces
Feb 2019	Near miss of fly rock. Rocks landed in close proximity to workers outside of the blast zone.	– Explosives – Exclusion zones
Mar 2019	Worker knocked over by light vehicle. Employee was leaving the lunch room and walking across workshop entrance, and walked behind a reversing van. The van driver did not see the employee as they walked in the drivers blind spot. The worker was knocked by the vehicle causing them to fall over and hit their head on the ground. Serious head injuries.	– Traffic management (Including pedestrian)
Mar 2019	Loader made contact with 11KV lines. While clearing an area a FLE lifted bucket and made contact with an overhead HV line. No injuries.	– Exclusion zones – Training – Job planning
May 2019	Rollover of articulated Volvo dump truck. Machine was tipping out on level ground with dozer operator acting as spotter.	– Training – Machinery selection
May 2019	Loss of control of a dump truck on haul road. Trainee operator driving down-hill changed down a gear in a wet patch of road (spot sprayed by the water cart) causing the truck to slide and turn across the haul road. No injuries.	– Training – Roads and other surfaces
May 2019	Near miss – A dump truck tyre burst with an operator in close vicinity on the ground adjacent The operator was assessed on site and then sent to the doctor for further assessment. Worker was cleared for a return to work.	– Tyre maintenance – Loading of trucks
May 2019	Rollover of quarry truck – Worker has been thrown out of wind screen. Worker injured and evacuated by helicopter.	– Training – Traffic management – Roads and other surfaces – Machinery selection
June 2019	Dump truck rolled off road into a small creek. No injuries. The driver was taken to hospital for a check and cleared.	– Roads and other surfaces – Training
June 2019	Excavator rollover – Operator feeding crusher was attempting to construct a ramp and lost control on loose rocks, slewing and then toppling.	– Roads and other surfaces – Training
June 2019	A barge capsized in settling pond. Worker jumped to safety into water away from tipping barge. No injuries.	– Machinery selection – Operating systems

TABLE 5: Safety events of note – July 2018 to June 2019

The regulator

IN THIS SECTION:

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 (eg 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- or desk-based assessment, or both.

Table 6 shows the range of assessments undertaken in Q1 2019/20 by sector.

		ASSESSMENTS	MINE	TUNNEL	ALLUVIAL MINE	QUARRY
Preventative	Site-based	Targeted assessments	1			2
		Regulatory compliance assessments	1	2	1	
		Site inspections	7		2	55
		Targeted inspections	3			
	Desk-based	PHMP/PCP review		11		
		Mine plan review	10	4		
		High risk activity	1			
Reactive	Site-based	Concerns – inspection				18
		Notifiable events – inspection	2			1
	Desk-based	Concerns – desk-based	1			9
		Notifiable event – desk-based	8			13

TABLE 6: Proactive and reactive site and desk based assessments conducted in Q1 2019/20

Figure 11 shows the number of proactive and reactive site- and desk-based assessments undertaken by the regulator in Q1 2019/20. This quarter 63% of our activities were site-based, and 66% of activities were proactive.

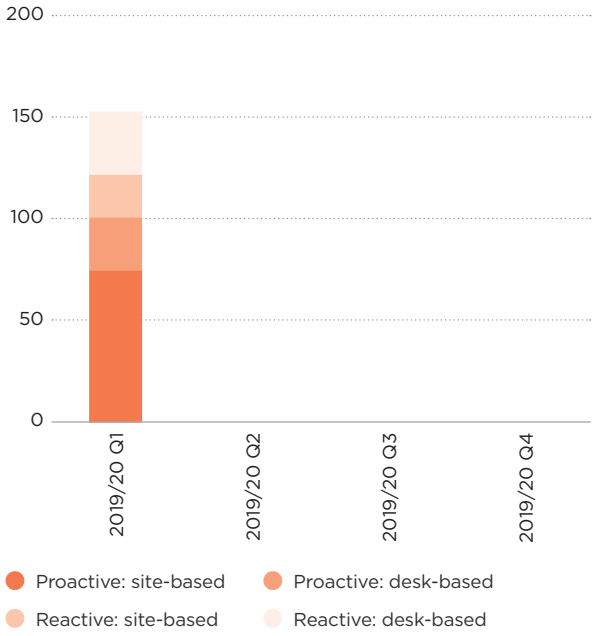


FIGURE 11:
Proactive and reactive site and desk-based assessments

Figure 12 shows the number of assessments undertaken by the regulator in Q1 2019/20 by sector. This quarter, 65% of our assessments were for quarries, 22% for mines, 11% for tunnels and 2% for alluvial mines.

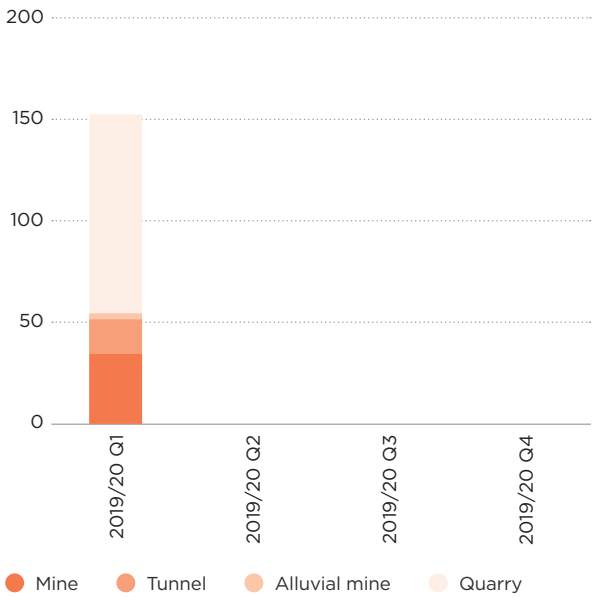


FIGURE 12:
Assessements by sector

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 13 and 14 show the number of enforcement actions issued in Q1 2019/20 by notice type and by sector. This quarter, a total of 120 enforcement actions were issued. Of those, 5% of were prohibition notices, 25% were improvement notices and 70% were directive letters. Over 70% of the enforcement actions were issued to the quarrying sector.

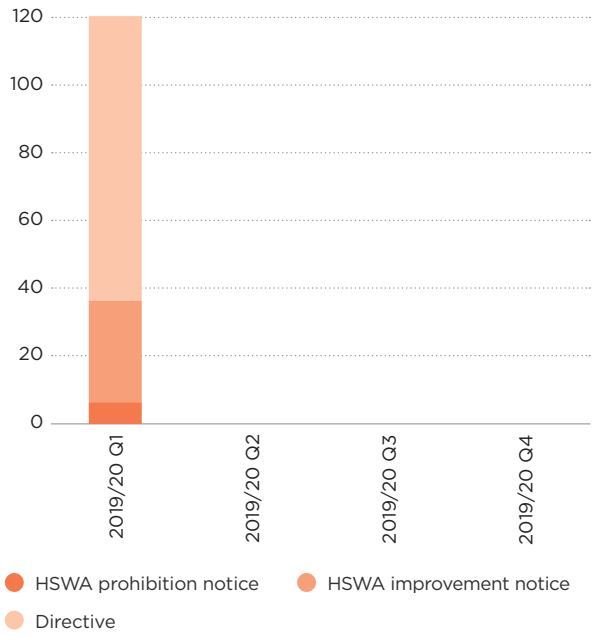


FIGURE 13: Enforcement actions issued by type

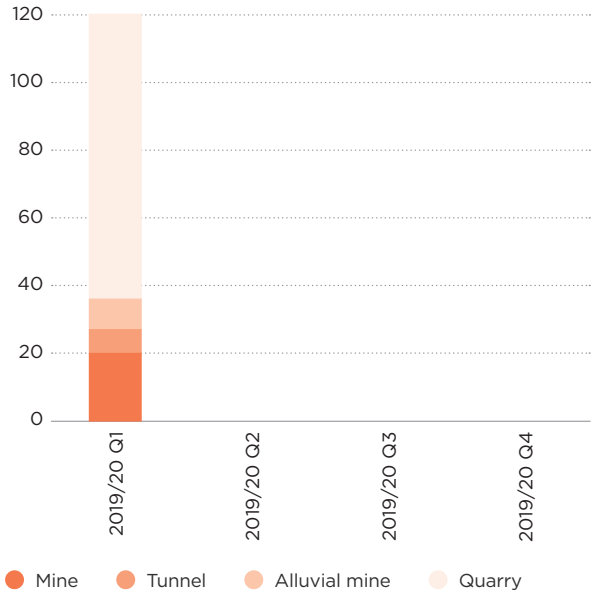


FIGURE 14: Enforcement actions issued by sector

Figure 15 shows the number of enforcement actions issued in Q1 2019/20 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 (18%) and worker health (19%).

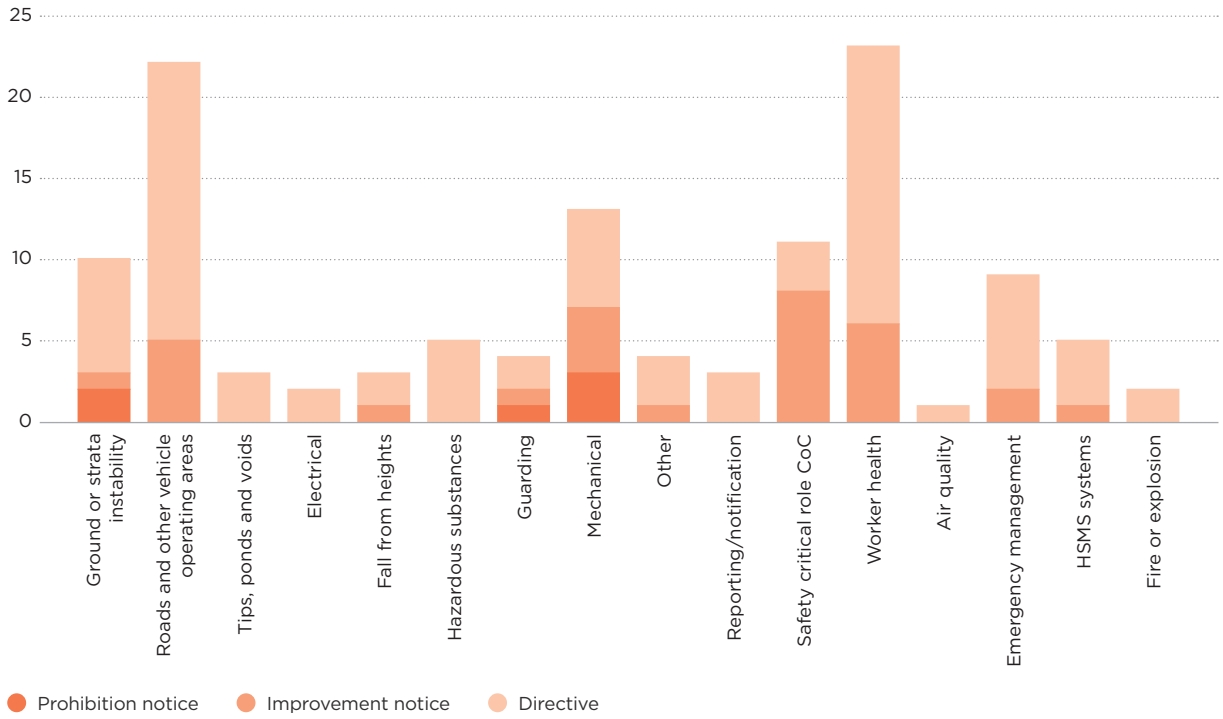


FIGURE 15: Enforcement actions issued by category 2019/20 Q1

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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