NSW GOVERNMENT

NSW Resources Regulator

Quarterly safety report

APRIL TO JUNE 2020

ABOUT THIS REPORT

This quarterly health and safety performance report has been prepared by the NSW Resources Regulator for mining operators in NSW. It contains industry and sector specific information, in addition to information regarding hazards. Where-ever possible, trends and patterns have been identified.

The report references sector information about the number of 'active' mines. Active mines have the status: open, intermittent, mines under care and maintenance, open tourist mines, planned and small-scale titles that are current or pending.

The report also contains information on matters of concern to the NSW Resources Regulator including controls and actions that may be implemented to prevent or reduce the likelihood of future safety incidents.

Operators should use the sector specific information, emerging issues and good practice examples presented in this report to assist them in improving safety management systems and undertaking risk assessments at their sites.

This report refers to the date the incident was notified rather than the date the incident took place.

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NSW GOVERNMENT

Quarterly snapshot

NSW Resources Regulator

The quarterly safety performance snapshot show key measures and assist industry in the development and promotion of safe work practices on mining operations.

7,749 Active mines at the end of the quarter

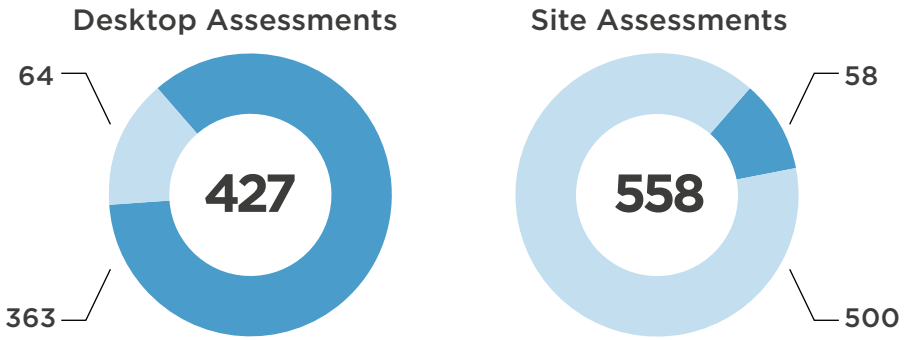
The NSW Resources Regulator regulates safety activities in the following industry sectors

122	39	2,671	194	3,944	779
COAL MINES	LARGE MINES metalliferous and large quarries	SMALL MINES metalliferous, small quarries and other gemstones	PETROLEUM & GEOTHERMAL including exploration	OPAL MINES	EXPLORATION excluding petroleum and geothermal

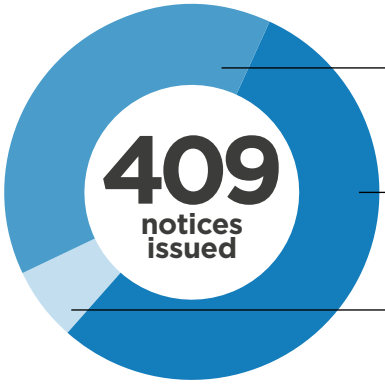
985 Assessments commenced

Proactive

Reactive



396	153	270	50	FROM 85 42	FROM 3 0	FROM 106 74
FROM 281	FROM 134	FROM 205	FROM 24			
COAL MINES	LARGE MINES	SMALL MINES	PETROLEUM AND GEOTHERMAL SITES	OPAL MINES	EXPLORATION SITES	NON-MINES



160 WHS(MPS)A s23 notices of concerns

223 WHSA s191 improvement notices

26 WHSA s195 prohibition notices

Quarterly snapshot

NSW Resources Regulator

88 Dangerous incident	Workplace death 0
91 Potentially dangerous incident	Serious injury/illness 29
157 Other high potential incident	Lost time/restricted duty injury/illness >= 7 days 77
1 Explosives regulation	Medical treatment injury/illness 36

479
Incident notifications received
based on requirement to report

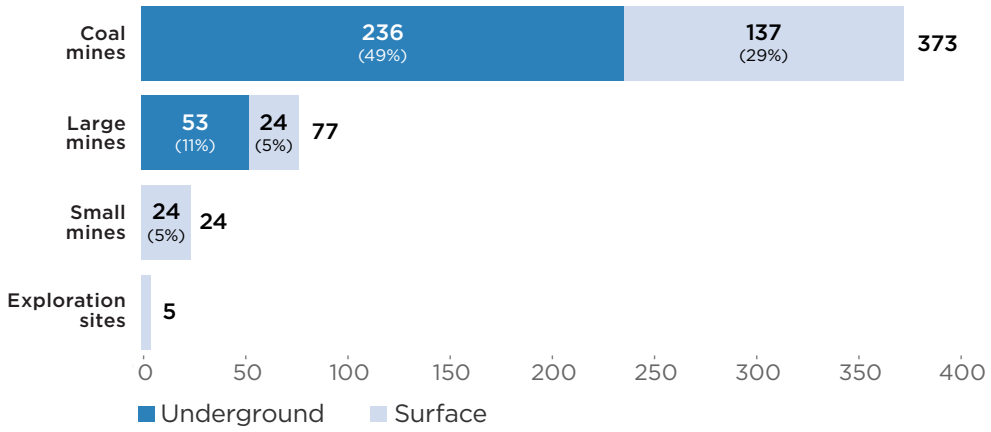
Incident notifications received by sector and operation type

FROM 404 **373** COAL

FROM 84 **77** LARGE MINES

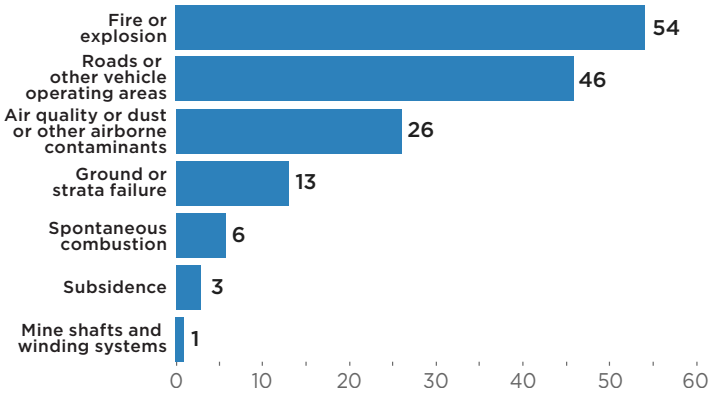
FROM 36 **24** SMALL MINES

5 FROM 2 EXPLORATION SITES



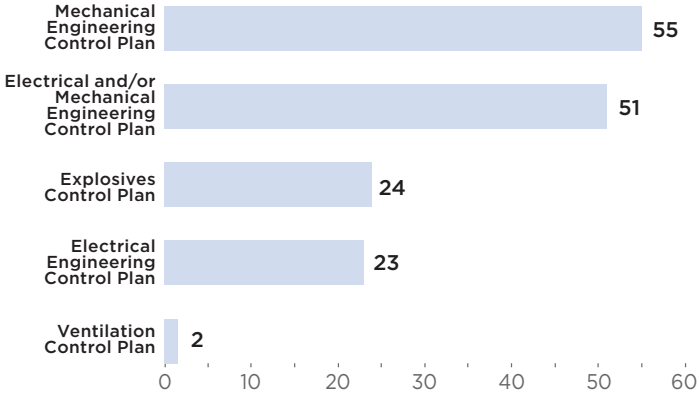
Incident notifications classified by principal hazard or principal control plan

Incident notifications classified by principal hazard



*149 of the 479 incidents

Incident notifications classified by principal control plan



*155 of the 479 incidents

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Contents

Executive Summary

This report is prepared to assist mine and petroleum site operators meet their obligations under relevant work health and safety legislation, including the *Work Health and Safety (Mines and Petroleum Sites) Act 2013*. It is also a way in which the Resources Regulator monitors progress in implementing our risk-based compliance and enforcement strategy.

As a high-hazard regulator, we focus on compliance with legislative requirements associated with principal and other high-risk hazards, including mechanical and electrical energy and explosives. This report highlights dangerous and high potential incidents, in addition to incidents where a serious injury occurred. 'Roads or other vehicle operating areas' and 'fires or explosion' are principal hazard classifications that feature regularly in the incident notifications to the regulator.

As well as providing an overview of incidents across the mining industry, this report looks at the safety performance and regulatory activities of six sectors: coal, large (non-coal) mines and quarries, small mines and quarries (including gemstones), opal mines, petroleum and geothermal sites, and exploration sites.

This report also provides information on significant mining events in Australia and globally, summarises safety incident notifications, compliance activities and outcomes from April to June 2020 (FY 2020 Q4). For selected measures, data is analysed over a 15-month period from April 2019 to June 2020.

There were no mining-related fatalities in NSW during the quarter.

In this quarter key compliance and enforcement activities include our statutory functions review in the small mines sector. Almost 40% of safety notices were issued to small mines, making it the largest contributing sector to the number of notices this quarter.

We also conducted a proactive inspection program focused on how mine operators were responding to COVID-19 risks. From this program it was identified that most operators had implemented appropriate controls, with only a small number of issues being identified which were largely minor in nature. Our COVID-19 inspection program contributed to the spike observed in proactive site assessments during FY 2020 Q4.

Under scheduled programmed activities, we conduct proactive and reactive site-based assessments and inspections. This quarter saw a substantial increase in the safety notice issue rate in the opal sector as compared to other sectors. Fewer opal sector assessments were conducted this quarter but the number of opal notices issued remained steady.

National and international significant events

The NSW Resources Regulator is committed to sharing safety information about significant mining-related events and fatalities to increase industry awareness.

This list includes fatalities and significant events of note that occurred between **April to June 2020**.

Incidents have been selected based on their relevance to equipment and processes commonly used across the NSW mining industry.

Australia

Fatal injuries

NEW SOUTH WALES

There was no mine or quarry-related fatalities reported this quarter.

OTHER STATES

Queensland

There was no mine or quarry-related fatalities reported this quarter.

Western Australia

There was no mine or quarry-related fatalities reported this quarter.

South Australia

There was one quarry-related fatality reported this quarter.

- A 29-year-old man was fatally injured at Truro Quarry on April 21. The worker received fatal injuries when attempting to clear a metal tramp blockage in a cone crusher. The crusher was not in operation at the time of the incident.

  SafeWork SA inspectors attended the scene. An investigation into the incident is continuing.

Dangerous incidents

NEW SOUTH WALES

Four dangerous incidents were published as safety bulletins or alerts this quarter.

TABLE 1. NSW RESOURCES REGULATOR SAFETY ALERTS AND BULLETINS

DATE PUBLISHED	REFERENCE	TITLE
21 Apr 2020	SA20-05	Worker sucked into auxiliary fan ventilation tube
09 Jun 2020	SA20-06	QDS pods fall off dolly car flat top and slide down drift
18 May 2020	SB20-02	Fire suppression system fails to discharge
25 May 2020	SB20-03	Electric shocks in the mining industry

OTHER STATES

Queensland Department of Natural Resources, Minerals and Energy (DNRME)

There were three safety alerts, seven Resources Safety and Health Newsflashes and 15 high potential incidents (in three incident periodicals) published in Queensland this quarter.

- An underground coal mine experienced two frictional ignition events on a longwall face. The events occurred about eight days apart and were both extinguished successfully. In both incidents the shearer was in the process of cutting through a geological structure (a down throw fault) on the longwall face. Additional controls introduced to manage the hazard after the first event proved inadequate to prevent a re-occurrence. A formal investigation is being conducted. Resources Safety and Health Newsflash
- A maintainer was completing post service checks, while seated in a grader with the cabin door open. The grader was fitted with a dynamic rotating access ladder. On completion of testing, the maintainer initiated a machine shutdown, and the ladder activated, swinging up. The maintainer was caught half out of the cabin when the ladder struck his foot. Resources Safety and Health Newsflash
- When the braking systems of a Getman EWP failed, the operator steered the unit into the wall to bring it to a stop. A worker positioned nearby evaded the unit and was unharmed. The vehicle came to a stop against the wall and in the process pinned the self-rescuer of the worker nearby. While attempting to reverse a Getman EWP up a decline, the operator selected reverse gear and disengaged the park brake. Despite the reverse gear engaging, the Getman rolled forwards down the decline. The Operator then attempted to use the service brake and the park brake to stop the Getman

rolling. Neither of these worked due to incorrect installation of the hydraulic dump valve, two days prior. Incident periodical - April 2020 (Mines/Quarries)

- A quarry worker was injured during the process of demobilising a mobile jaw crusher for transport. The mechanical wedges that tie the wing wall at the rear of the hopper had been removed, allowing the wing wall to be lowered in a controlled manner using a hydraulic ram. The clevis and retaining pins normally attached were missing. This left the wing wall unsupported when the mechanical wedges were removed. A worker climbed onto the track and frame of the jaw crusher in order to observe why the wing wall was not moving when the ram was being actuated. The wing wall fell in an uncontrolled manner to its folded position, striking the worker on the neck. Incident periodical - April 2020 (Mines/Quarries)
- After losing braking, an operator steered a water truck into the wall of an underground decline, causing minor injuries to the operator and damage to the truck. While travelling down a decline with a 90% payload, an on-highway rigid-body water truck converted for underground use lost braking function. The operator reported the exhaust brake, service brake, parking brake and retarder were ineffective at stopping the vehicle. The truck was then steered into the wall, coming to a stop. The SIBS braking system fitted to the truck was not activated during the incident. Incident periodical - April 2020 (Mines/Quarries)
- A worker received lacerations to the forearm as a result of being struck by coal that had spalled from a longwall face. The worker was treated in hospital, receiving sutures to the injured arm. Incident periodical - April 2020 (Coal)
- An empty rear dump truck lost tractional control descending a ramp resulting in the truck rotating 180+ degrees from its direction of travel, before coming to a stop. The ramp had been recently watered. The truck had all wheels in a wet line. Incident periodical - April 2020 (Coal)
- A Load Haul Dump (LHD) machine with two QDS pods attached struck an Explosion Risk Zone (ERZ) Controller who was walking in the same direction. He was knocked down and pushed along the ground for approximately two metres before the LHD came to a stop. The ERZ Controller received minor abrasions, and both the LHD operator and the ERZ Controller were in shock after the incident. Ventilation tubes on the Pod reduced the LHD operator's vision. Incident periodical - April 2020 (Coal)
- While accessing a coal mine, a contractor's heavy rigid truck, fitted with a 70m travel tower, lost control and rolled over. The road was sealed, and the incident occurred on a right-hand bend in the road. The section of road where the incident occurred was restricted to 40kph at the time of the event occurring. The driver was not seriously injured. Incident periodical - April 2020 (Coal)

- An electrician noticed a door to a switchboard open and received a shock as he closed and latched the door. The electrical protection operated, removing power from the circuit. The investigation revealed the latch has contacted and damaged a 240 VAC phase conductor. Incident periodical - April 2020 (Coal)
- A maintenance worker was preparing to lift an electric alternator which had just been removed from a truck. The worker was raising the chains on the crane hoist to check the chain leg lengths with the hooks not attached. One of the chain hooks became caught between the lifting lug and a cover, causing it to load and then eject, striking the worker's nose. Injuries included bruising and swelling. Incident periodical - April 2020 (Coal)
- During routine servicing at an open cut coal mine, the fire suppression system failed to actuate as designed when attempts were made to activate it manually. On further investigation, it was found that the dimensions of the cylinder discharge valve shuttle assembly were outside of tolerances causing it to not seat or actuate correctly. Resources Safety and Health Newsflash
- Two workers were injured in a rock fall while placing explosives at the brow in preparation for bombing the draw point. About 50 kilograms of rocks fell from the backs about five metres from the brow. The ground had been damaged during a previous draw point bombing. The mesh was badly damaged, and rocks were bagging in it. Mines safety alert No.372
- Two dump trucks collided at a haul road T-intersection in a mine. Both trucks were travelling at speed when the collision occurred. Significant damage was caused to the front of one truck and the left-hand side of the other truck. The truck drivers were not injured. Resources Safety and Health Newsflash
- Five coal mine workers suffered serious burn injuries during a gas ignition event on a longwall face in an underground mine near Moranbah. The cause of the ignition event is under investigation. The mine was evacuated and secured to prevent people entering the mine until gas monitoring analysis and re-entry risk assessment determined it was safe to do so. The workers received hospital treatment for their injuries. Resources Safety and Health Newsflash
- The increased demand for respiratory protection has resulted in sub-standard or 'fake' respirators entering the industry. It has been observed that despite being appropriately branded, some respirators have not been manufactured in accordance with a relevant Standard or equivalent international scheme (i.e. A/NZS, NIOSH etc). Mines safety alert No.373

- There has been a recent increase in reported incidents of coal mine workers being struck by polyethylene pipe as a result of stored energy being released suddenly and uncontrolled. These incidents have resulted in five individuals receiving a fractured lower leg in separate incidents since 31 October 2018. Mines safety alert no.374
- Following an undercarriage track change on an excavator, a metal shard was ejected from the track sprocket. The metal shard travelled 35 metres, breaking a side window and entering the cabin of a parked service truck. Resources Safety and Health Newsflash
- Internal inspections of several exhaust conditioner inlets have shown reduced integrity over time from corrosion and/or cracking of the internal gussets that support the exhaust inlet pipe. After the gussets crack, they no longer support the welded connection between the inlet pipe and the lid. The weld in this location, which separates the inlet exhaust gas from the outlet conditioned exhaust gas, can crack from lack of support. Resources Safety and Health Newsflash
- Coal mine workers observed evidence of a fall of ground at the highwall. Good communication ensured that there was no impact to the safety of workers. The failure occurred in a controlled manner and within the defined exclusion zone. Incident periodical - May 2020 (Coal)
- Drill operators, operating outside the exclusion zone, were forced to evacuate to safety as a highwall failed and material breached the exclusion zone. Incident periodical - May 2020 (Coal)
- A release of energy incident occurred as a cylinder pin was being removed from an excavator boom. The attachment point failed at the weld and the energy release in the sling caused the attachment to strike the windscreen. No workers were injured. Incident periodical - May 2020 (Coal)
- A worker sitting in a dozer narrowly escaped injury when the dozer window was hit by a projectile. A nearby (20 metres) tyre failure, released energy and ejected a 50-millimetre rock through the glass door of the dozer. Incident periodical - May 2020 (Coal)
- A worker suffered a serious knee dislocation while accessing a ventilation door. The door was under pressure and as the worker applied extra force to open it, the worker was injured. The injuries included a tear to the ACL and a fracture. Incident periodical - May 2020 (Coal)
- An unattended driftrunner was hit with a load, carried by a forward moving Eimco front end loader. The driftrunner had been left parked across the cut through, parallel to the road on the offside of the Eimco operator cabin. No-one was in the driftrunner at the time of the collision. Incident periodical - May 2020 (Coal)

Western Australian Department of Minerals and Resources (DMIRS)

There were three safety alerts/bulletins and one significant incident report published in Western Australia during the quarter.

- In April 2020, a worker was transferring compressed air from one air receiver (pressure vessel) to a second air receiver that was mounted on a frame for transportation with a forklift. The second air receiver ruptured and broke away from the frame. Parts of the vessel struck the worker, causing an eye injury, hearing damage and other injuries. Safety alert 02/2020
- An underground miner was recently diagnosed with Legionnaires' disease after suffering severe respiratory distress and pneumonia that developed quickly from flu-like symptoms. Despite being young, fit and healthy, the miner required urgent medical intervention in an intensive care unit before he made a full recovery. High levels of legionella pneumophila were identified at the underground wash bay where the miner had used high pressure, water blasting equipment to clean heavy machinery during his last roster. Mines safety bulletin no.174
- There have been numerous reports of failed and damaged equaliser cables on vehicle hoists, including those types with two or four posts. The equaliser cables are typically made using steel wire rope and are used to keep the hoist level during raising and lowering. Over time, equaliser cables can stretch, fray, corrode, crack or break and therefore should be regarded as a wearing component. Mines safety bulletin no.175
- In February 2020, a service crew was relocating a jumbo box and hanging an attached high voltage electrical supply cable. They were using an integrated tool carrier (ITC) with a work basket. A linkage failure on the boom of the ITC resulted in the two workers being thrown onto the ground. The workers suffered serious, but non-fatal injuries. Significant incident report (SIR) No 281

TABLE 2. WA DEPARTMENT OF MINERALS AND RESOURCES - MINES SAFETY BULLETINS

REFERENCE	TITLE
MSB No.174	High pressure water cleaning creates mists and aerosols causing Legionnaires disease
MSB No.175	Integrity of equaliser cables on vehicle hoists
Mines safety alert 02/2020	Pressure vessel fail injures worker

Northern Territory Worksafe

There was one mining related safety alert published in the Northern Territory during the quarter.

- A worker suffered serious crush injuries when a self-dumping bin, full of building rubble, tipped forward onto his leg. The worker was standing in front of the bin when it tipped forward. Safety Alert

New Zealand

Fatal injuries

There was one mining and quarry-related fatality reported this quarter in New Zealand.

- An articulated dump truck, operating in a quarry, left the haul road and fell approximately 12 metres landing on the quarry bench below, fatally injuring the driver. NZ Safety Alert

Dangerous incidents

There were two mining and quarrying-related safety alerts published in New Zealand during the quarter.

- An articulated dump truck (ADT) was travelling empty down a steep haul road when the truck started to accelerate. The operator applied the exhaust retarder and then the brakes, but neither action slowed the ADT down. The operator tried to run the ADT into a bund, however lost control of the truck. The truck rolled onto its right-hand side. The operator was not injured. NZ Safety Alert
- A worker was seriously injured by the release of pressurised hydraulic fluid into his face and eyes. The worker was conducting field maintenance on a mobile crusher when the incident occurred. NZ Safety Alert

United States of America

Fatal injuries

The United States of America's Mine Safety and Health Administration (MSHA) published four, mining related fatality alerts during the quarter.

- On May 2, 2020, a 56-year-old worker, with eight years' experience died, when he was engulfed by material, at a sand and gravel mine. The worker entered a dredged sand and gravel bin (feed hopper) through a lower access hatch to clear an obstruction. As he began clearing a blockage with a bar the material remaining on the inner sides of the hopper, slid down and engulfed him. Fatality Alert
- On June 1, 2020, a 61-year-old contract truck driver, with less than one months' experience, died after falling from the top of his trailer. At the time of the incident the driver was attempting to deploy the trailer tarp on his truck. The driver received first aid/CPR at the scene and passed away after being transported to a local hospital. Fatality Alert
- On June 13, 2020, a 25-year-old dragline operator, with approximately three years' experience, died after an incident at a construction sand and gravel dredging operation. The worker was operating a dragline to remove material from a pond. The dragline was found submerged in 25 feet of water. After two days, the dragline was extricated from the pond and the victim was located. Fatality Alert
- On June 19, 2020, a 68-year-old miner, with 40-plus years' experience, died while inspecting a stockpile for oversized material. As the victim walked along the toe of the stockpile, a portion of the stockpile collapsed, covering him with approximately four feet of material. Fatality Alert

Compliance and enforcement

The NSW Resources Regulator uses a range of tools to promote and secure compliance in mines and petroleum sites in relation to work health and safety legislation. These include desktop assessments, site inspections, investigations and enforcement actions, such as issuing notices and commencing prosecutions.

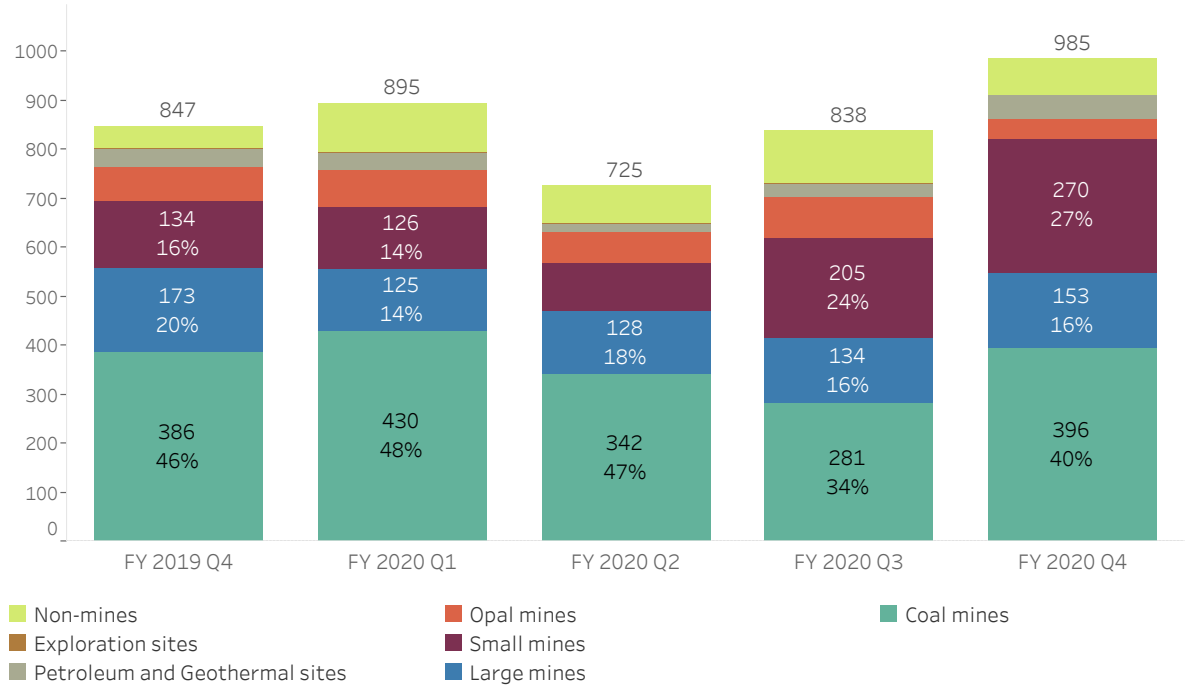
Detailed information regarding compliance activities, priorities, outcomes and reports are published on our website and in our monthly business activity reports.

In this quarter, the NSW Resources Regulator conducted a proactive inspection program focusing on how mine operators were responding to COVID-19 risks. From this program it was identified that most operators had implemented appropriate controls, with only a small number of issues being identified which were largely minor in nature. This programmed work is reflected below in the assessments commenced and notices issued for the quarter.

Safety assessments by sector

The number of safety assessments commenced by quarter during the past 15 months is shown below, by mining sector.

FIGURE 1. SAFETY ASSESSMENTS BY SECTOR APRIL 2019 TO JUNE 2020



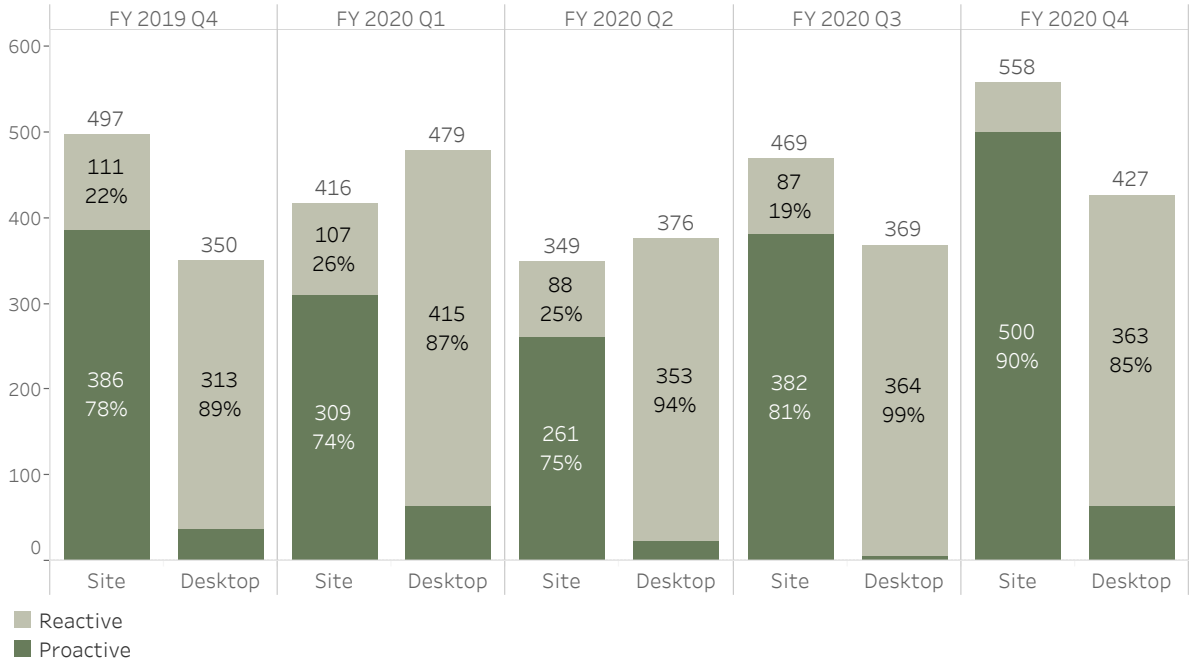
Safety assessments by category and nature

Site-based (visiting mine sites) and desktop activities are both important regulatory tools. While the main focus of our on-site compliance activity is on preventing incidents through planned risk-based proactive assessments, our desktop activities are mainly reactive.

Site-based proactive assessments focus on establishing whether critical controls have been effectively implemented. Meanwhile desktop assessment activities include reviews of control measures following an incident, review of standing dust committee reports, assessment of high-risk activity notifications, applications for exemptions from work health and safety laws, subsidence management plans and preparation for site work.

Our COVID-19 inspection program contributed to the spike observed in proactive site assessments during FY 2020 Q4.

FIGURE 2. SAFETY ASSESSMENTS BY CATEGORY AND NATURE APRIL 2019 TO JUNE 2020

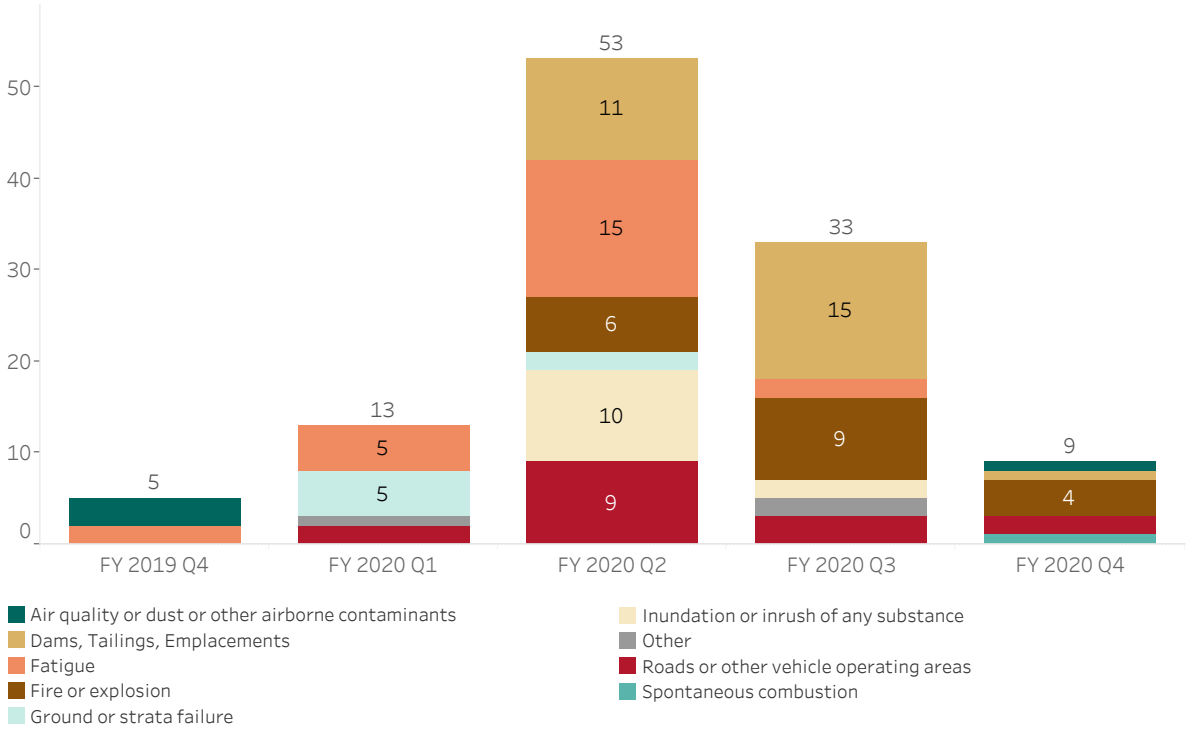


Targeted assessment program

Our targeted assessment program establishes a risk-based and proactive approach for assessing the extent to which critical controls for managing principal mining hazards have been implemented. Each TAP is performed by a team of inspectors from various disciplines. The team works with the mining operation's management team to ensure a thorough assessment is conducted.

In the current quarter, nine targeted assessments were commenced, across five different hazards.

FIGURE 3. TARGETED ASSESSMENTS BY HAZARD APRIL 2019 TO JUNE 2020

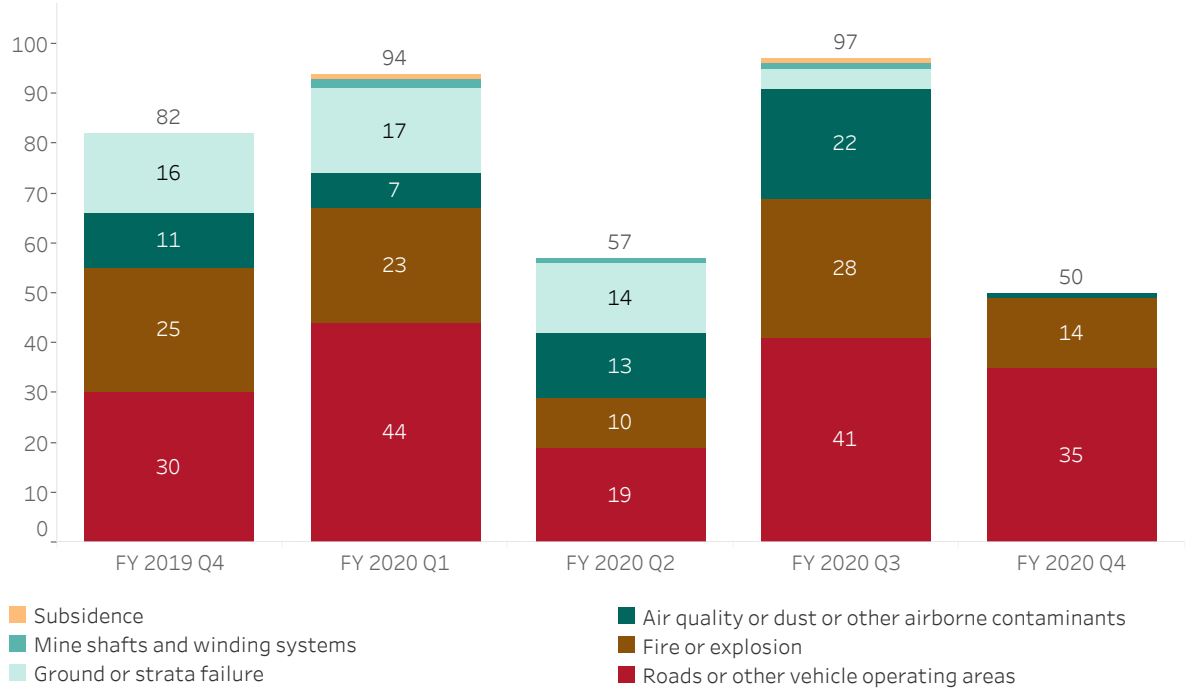


Planned inspections

Planned inspections assist in identifying compliance weaknesses which could lead to an incident or injury. These assessments follow a pre-prepared plan focusing on a specific hazard or principal control plan.

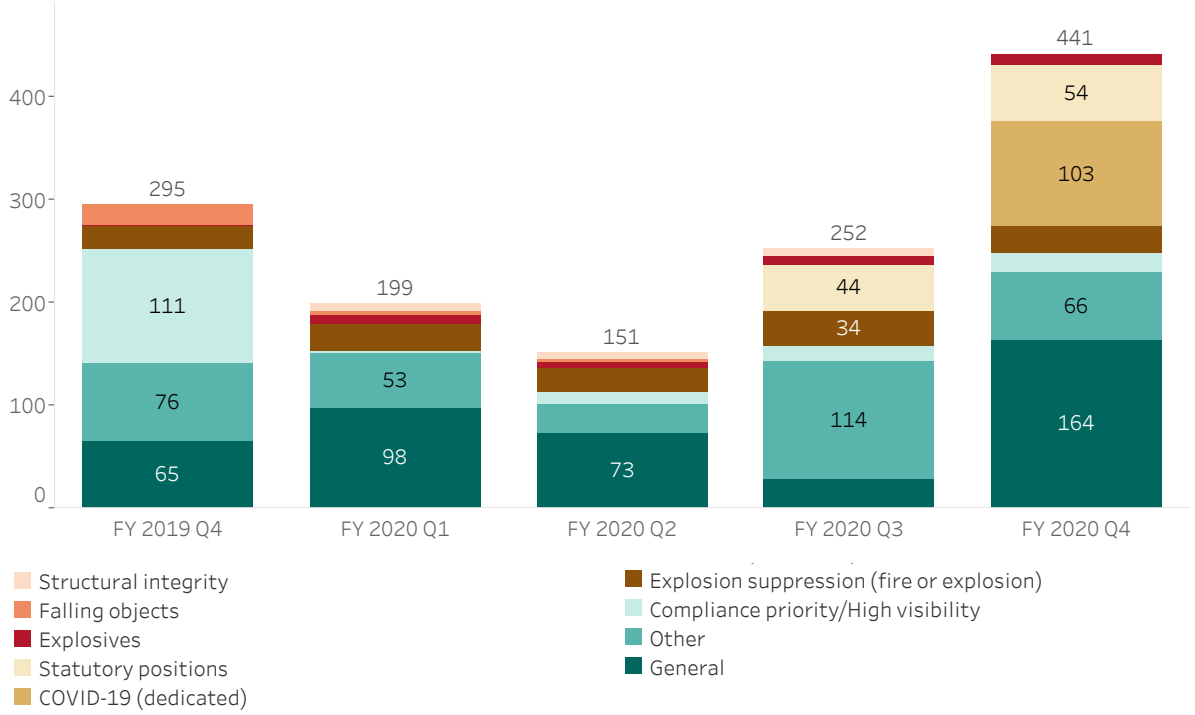
Planned site inspections were commenced on the principal hazards shown in the graph below.

FIGURE 4. PLANNED INSPECTIONS BY PRINCIPAL HAZARD APRIL 2019 TO JUNE 2020



The following figure shows planned site inspections commenced on ‘other’ hazards. Our inspection program focused on how mine operators were responding to the COVID-19 risks, contributed to the spike observed in FY 2020 Q4.

FIGURE 5. PLANNED INSPECTIONS BY 'OTHER' HAZARD APRIL 2019 TO JUNE 2020

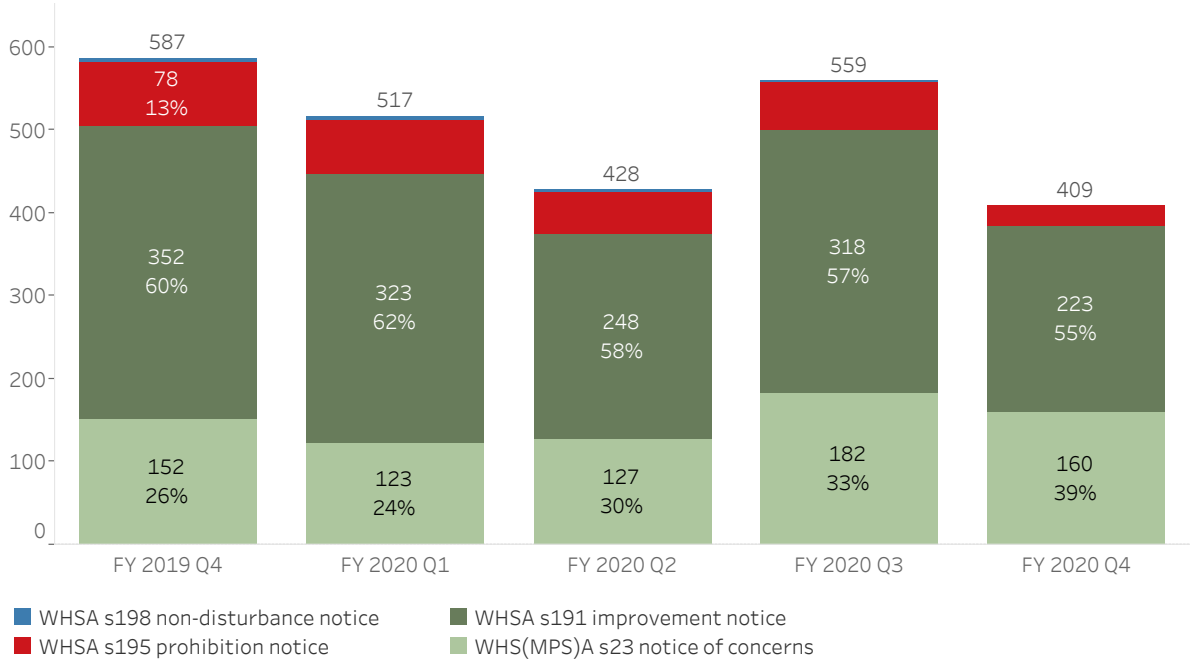


Safety notices issued

We issue risk-based safety notices including prohibition and improvement notices, notices of concern (written notice of matters) and non-disturbance notices.

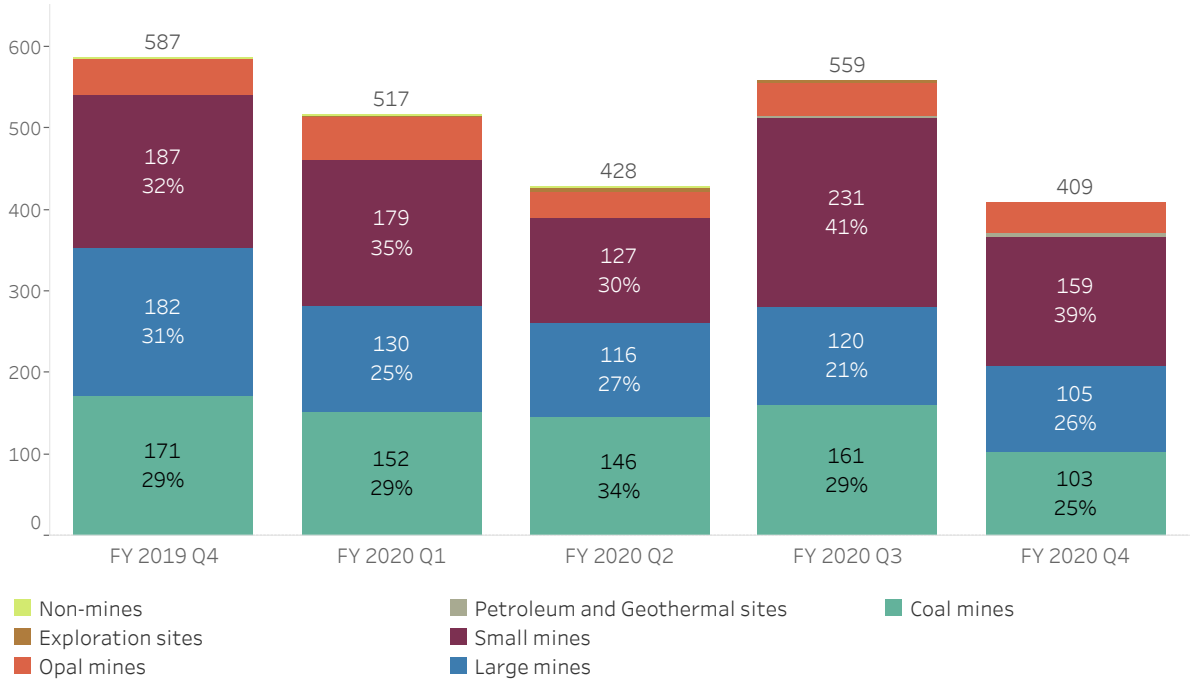
The following graph shows the number and types of safety notices issued during each of the five quarters since April 2019. In FY2019 Q4 our high visibility operation contributed to the highest number of notices issued across the five quarters in the reporting period. Notably the COVID-19 proactive inspection program conducted during FY2020 Q4 resulted in only a small number of notices issued as most operators had implemented appropriate controls, with only a small number of issues being identified which were largely minor in nature.

FIGURE 6. SAFETY NOTICES ISSUED BY NOTICE TYPE APRIL 2019 TO JUNE 2020



The figure below shows safety notices issued by mining sector. For the April – June 2020 quarter, almost 40% of safety notices were issued to small mines, making it the largest contributing sector to the number of notices this quarter.

FIGURE 7. SAFETY NOTICES ISSUED BY SECTOR APRIL 2019 TO JUNE 2020

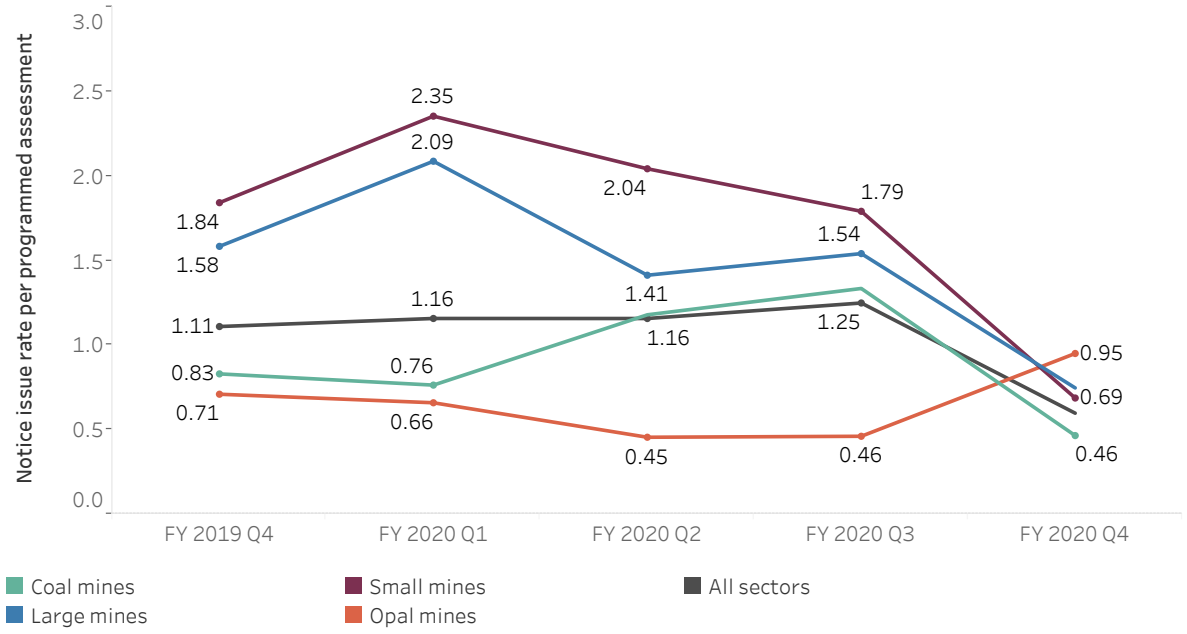


Safety notice issue rate for program plans

Under scheduled programmed activities, we conduct proactive and reactive site-based assessments and inspections. Only notices issued under a program plan assessment have been included in the rate-based calculation presented below. Further, petroleum and geothermal sites, exploration sites and non-mines, have been included in the 'all sectors' category.

The April – June 2020 quarter saw a substantial increase in safety notice issue rate in the opal sector as compared to the previous quarter and other sectors. Fewer opal sector assessments were conducted this quarter while the number of opal notices issued remained steady.

FIGURE 8. SAFETY NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT BY SECTOR APRIL 2019 TO JUNE 2020



In the spotlight
COVID-19 proactive inspection program

The NSW Resources Regulator has published the results from its proactive inspection program which focused on how mine operators were responding to the COVID-19 risks.

The inspection program, which has seen 178 inspections carried out across 87 different mine sites, generally found that mine operators had responded quickly and appropriately to risks posed by the virus and overall standards were high.

Our planned inspection program consistently observed that mine sites were:

- educating the workforce on the signs and symptoms of COVID-19 and encouraging self-reporting
- implementing health surveillance controls
- putting into practice good hygiene, including routine cleaning of mobile plant and crib rooms
- providing resources to allow practice of social distancing (i.e. providing more transport onsite to allow workers to be 1.5 metres apart)
- allowing flexible working from home arrangements (where appropriate) and providing robust supervision arrangements onsite.

We will continue to monitor the implementation of controls through our proactive inspection program and mine operators are reminded of the need to remain vigilant to both COVID-19 related risks and the risks associated with mining hazards.

Read the full COVID-19 inspection report here.

Hazard management

The Work Health and Safety (Mine and Petroleum Sites) Regulation 2014 (the Regulation) identifies principal hazards and principal control plans for special consideration.

Principal hazards have a reasonable potential to result in multiple deaths in a single incident or a series of recurring incidents.

Principal control plans cover risks to health and safety from hazards, work processes and plant that may result in incidents that are high potential, frequently occurring or of a certain complexity.

SUMMARY OF INCIDENTS

The table below shows the number of incident notifications received for the past five quarters as classified against a principal hazard or principal control plan.

This quarter we have further refined how we classify incidents. This change includes classifying incidents as being related to either a principal hazard or principal control plan, so the volume of incidents against principal hazard may vary slightly when compared to previous reports.

Overall there were 479 incident notifications received in the current quarter. Of these, 31% (149) related to principal hazards, 32% (155) related to principal control plans and the remainder related to other incidents.

TABLE 3. INCIDENT NOTIFICATIONS CLASSIFIED BY PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN APRIL 2019 TO JUNE 2020

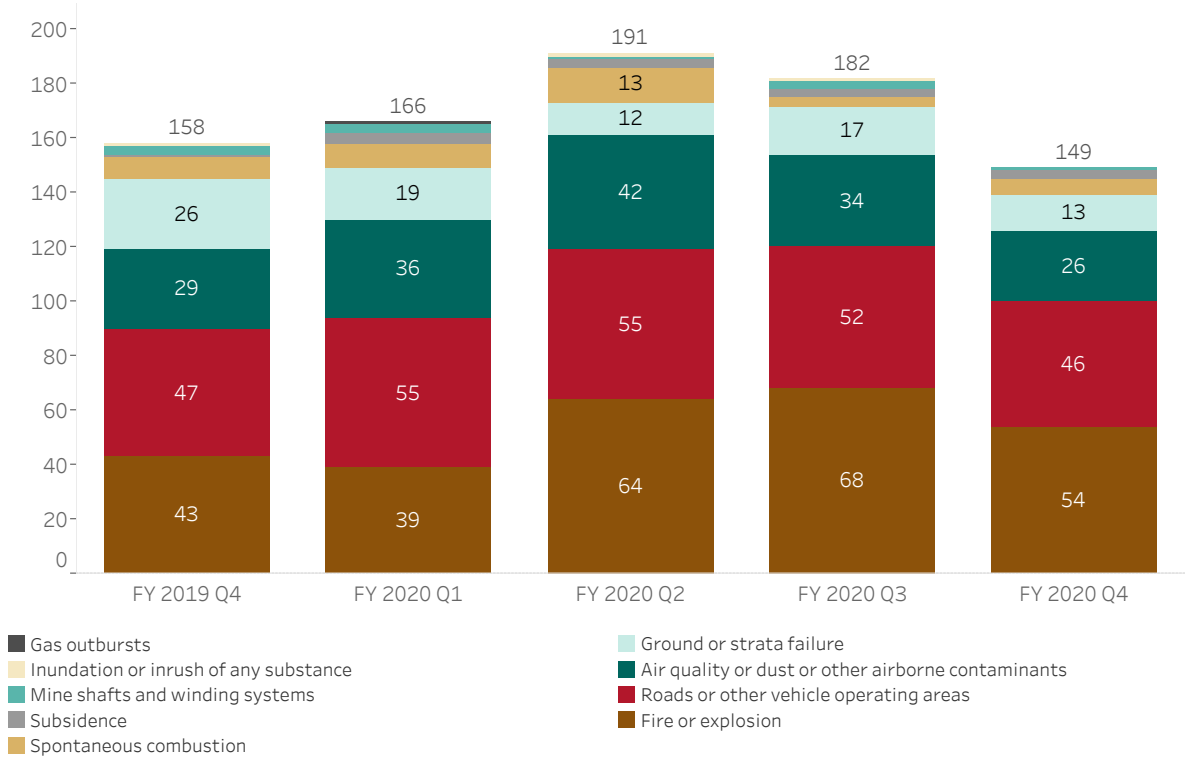
INCIDENT PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN CLASSIFICATION		FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	GRAND TOTAL
Principal hazard	Air quality or dust or other airborne contaminants	29	36	42	34	26	167
	Fire or explosion	43	39	64	68	54	268
	Gas outbursts	-	1	-	-	-	1
	Ground or strata failure	26	19	12	17	13	87
	Inundation or inrush of any substance	1	-	1	1	-	3
	Mine shafts and winding systems	3	3	1	3	1	11
	Roads or other vehicle operating areas	47	55	55	52	46	255
	Spontaneous combustion	8	9	13	4	6	40
	Subsidence	1	4	3	3	3	14
	Total	158	166	191	182	149	846
Principal control plan	Electrical Engineering Control Plan	28	41	26	24	23	142
	Electrical and/or Mechanical Engineering Control Plan	52	64	72	51	51	290
	Explosives Control Plan	32	31	18	13	24	118
	Mechanical Engineering Control Plan	63	53	55	78	55	304
	Ventilation Control Plan	9	7	8	3	2	29
	Total	184	196	179	169	155	883
Not applicable	Not applicable	152	199	184	175	175	885
GRAND TOTAL		**494**	**561**	**554**	**526**	**479**	**2,614**

Principal hazards

- GROUND OR STRATA FAILURE
- FIRE OR EXPLOSION
- INUNDATION OR INRUSH OF ANY SUBSTANCE
- GAS OUTBURSTS
- MINE SHAFTS AND WINDING SYSTEMS
- SPONTANEOUS COMBUSTION
- ROADS OR OTHER VEHICLE OPERATING AREAS
- SUBSIDENCE
- AIRBORNE DUST AND OTHER AIRBORNE CONTAMINANTS
- (HAZARDS IDENTIFIED BY THE MINE OPERATOR) PROHIBITED ITEMS OR SUBSTANCES

The chart below presents a further breakdown of numbers of incident notifications received by quarter related to principal hazards as defined in clause 5 of the Regulation.

FIGURE 9. INCIDENT NOTIFICATIONS RECEIVED BY PRINCIPAL HAZARD APRIL 2019 TO JUNE 2020

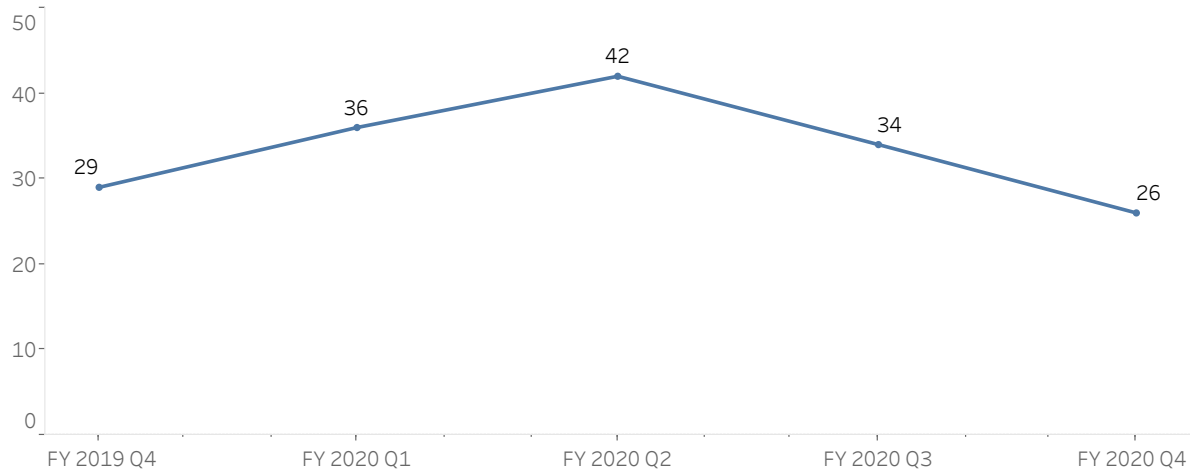


FROM 34
26

Air quality, dust or other airborne contaminants

Airborne contaminants comprise a large and varied range of substances and forms. Coal and silica particles, along with methane and carbon monoxide, are regularly present in mining as dusts, fumes and vapours. These contaminants have exposure standards and can affect workers rapidly (CO or CO2) or over several years (coal or silica).

FIGURE 10. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD AIR QUALITY, DUST OR OTHER AIRBORNE CONTAMINANTS APRIL 2019 TO JUNE 2020



NEW SILICA EXPOSURE STANDARD PRESCRIBED

The new respirable crystalline silica workplace exposure standard of 0.05mg/m^3 came into effect in NSW on 1 July 2020. The new exposure standard is prescribed following a revision of the Workplace Exposure Standards for Airborne Contaminants (WESFAC).

Mines and petroleum sites now need to report exceedances of the new exposure standard to the Resources Regulator.

We recognise that the ability to meet this new standard may be challenge to some mine operators. However, in consideration of the insidious nature of silicosis and other respirable dust diseases, it is our position that a reduction in the exposure standard is appropriate and compliance is achievable through the application of the hierarchy of controls.

The position paper details our regulatory approach during the period of July - December 2020 to assist the NSW mining industry in managing the transition to compliance with the new exposure standard.

HIGH POTENTIAL INCIDENT – PARTIAL USE OF PPE IS INEFFECTIVE

A personal hygiene monitoring result was received on 11 June 2020 from quarterly hygiene monitoring conducted on 11 May 2020, indicating there had been an exceedance of the workplace exposure standard (WES) for respirable silica and dust. A worker that had been chipping out an agitator bowl with a jack hammer returned a result of 0.25mg/m^3 for the 8-hour normalised period for respirable silica and 19mg/m^3 for respirable dust.

An initial review of the incident identified that the worker had worn appropriate respiratory protection for the duration of the task with a protection factor of 40. After further investigation it was identified that the worker had removed the monitoring device due to it 'getting in the way' and placed it on the ground for an extended period, which has resulted in an invalid sample.

Arrangements have been made to conduct follow-up testing when the task is performed again.

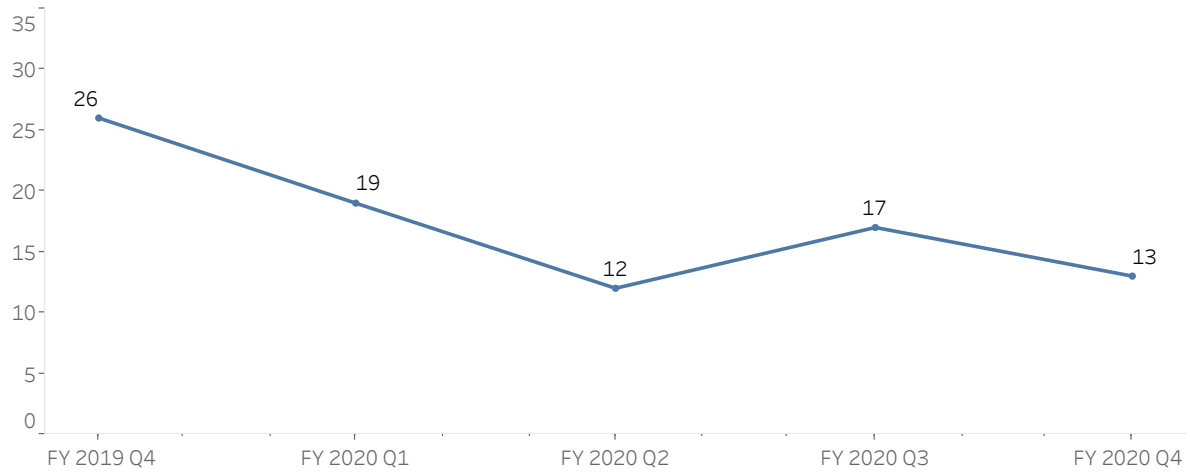
Recommendations include:

- Use of respiratory protection equipment (RPE) is a 'last line of defence' control and should be used in conjunction with, and not as an alternative to, higher order controls.
- Proper fitting and maintenance of RPE is important to ensure it remains effective.
- Intermittent use of RPE over the course of a sampling period can significantly reduce its effectiveness.

Ground or strata failure

Ground or strata failure is an ever-present hazard in both surface and underground mining, with a significant risk posed to workers from unplanned movement of ground.

FIGURE 11. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD GROUND OR STRATA FAILURE APRIL 2019 TO JUNE 2020



DANGEROUS INCIDENT - SHAFT FAILURE

While drilling contractors were drilling a ventilation shaft from the surface of an underground coal mine, they noticed a loss of return water from the shaft. Drilling was stopped. It was identified that a bulkhead, installed underground to isolate the shaft construction from the mine workings, had failed. Further ground movement into the shaft void destabilised the drilling rig and platform, which partially collapsed into the collar of the shaft.

The Resources Regulator is carrying out a causal investigation with the cooperation of the relevant stakeholders.

Related alerts and bulletins:

- IIR20-07 Wambo fan shaft failure

DANGEROUS INCIDENT - CONSTRUCTED BENCH GIVES WAY

An operator was digging out a sediment pit with a long-reach digger, when the ground at the front of the digger gave way and the digger tipped forward about 45 degrees. The operator lowered the bucket to stabilise the digger and exited the machine. At the time of the incident, the excavator was working from a constructed bench to remove sediment and load it into a haul truck.

Recommendations include:

- Equipment operators must maintain situational awareness and remain vigilant to the risk of machine rollovers.
- Suitable bunding should be in place to protect mobile plant from accessing edges of benches.
- If bunding is not installed, there should be adequate demarcation of the work area, so operators are aware of their positioning in relation to the bench edge.

DANGEROUS INCIDENT – SLUMP TRAPS DOZER

A dozer operator was pushing coal on a stockpile and was trying to dig out a bridge that had formed over a valve. The bridge unexpectedly collapsed, causing the coal to slump under the right-hand track of the dozer. The operator was unable to drive the dozer out but decided to exit the dozer and walk from the stockpile.

Recommendations include:

Operators are reminded of the potential hazards associated with a dozer on a stockpile. Importantly, the decision to exit the dozer placed the operator at heightened risk, because further movement of the stockpiled material could have resulted in him being engulfed.

- Before starting work, supervisors and equipment operators should inspect and assess the work area to determine hazards, such as the potential for material bridging and subsequent collapse.
- Planning for the work must include identification of hazards, risk assessment and control.

Related Guidance:

- MDG28 - Safety for stockpiles and reclaim tunnels

DANGEROUS INCIDENT – WORKERS KNOCKED TO THE GROUND

Following a goaf fall, a considerable volume of air was expelled outbye along the return roadways of a partial pillar extraction operation. But instead of the air returning via the same pathway, it was drawn at considerable velocity from the intake side of the workings. This caused several workers to be knocked to the ground.

Recommendations include:

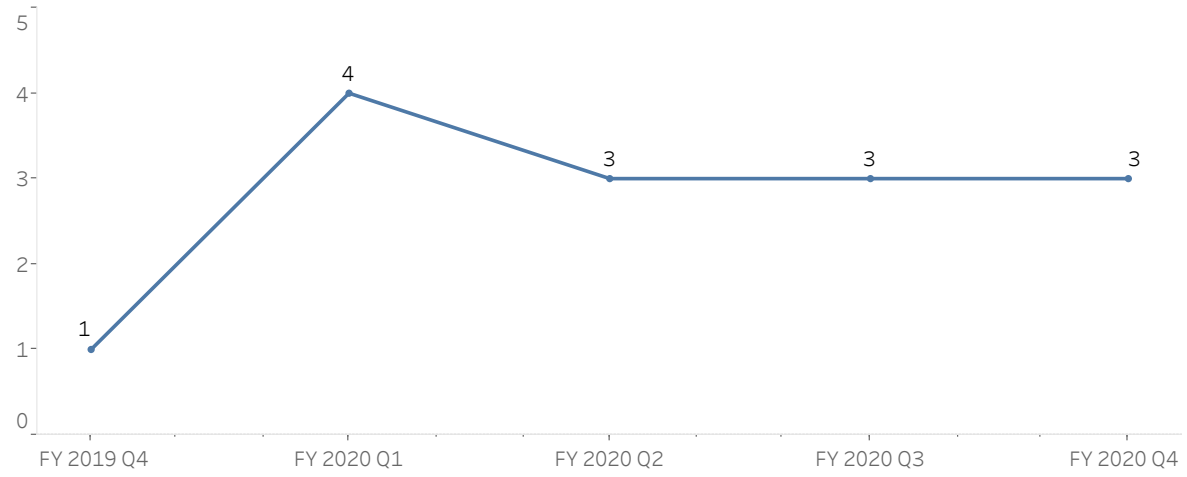
- Consideration should be given to the potential impacts of secondary goaf formations when extraction is occurring in, and around, areas of structured geology.
- An assessment should be carried out of these areas by a suitably qualified geotechnical engineer, with their recommendations considered when developing and/or reviewing the manner and sequence of extraction.

NO CHANGE
3

Subsidence

Subsidence hazards are a potential in any land, below which, there has been underground mining. The potential to cause significant damage, from deformation or sinkholes, to infrastructure (roads, dwellings etc) and injure persons nearby, makes this a principal hazard in NSW.

FIGURE 12. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD SUBSIDENCE APRIL 2019 TO JUNE 2020

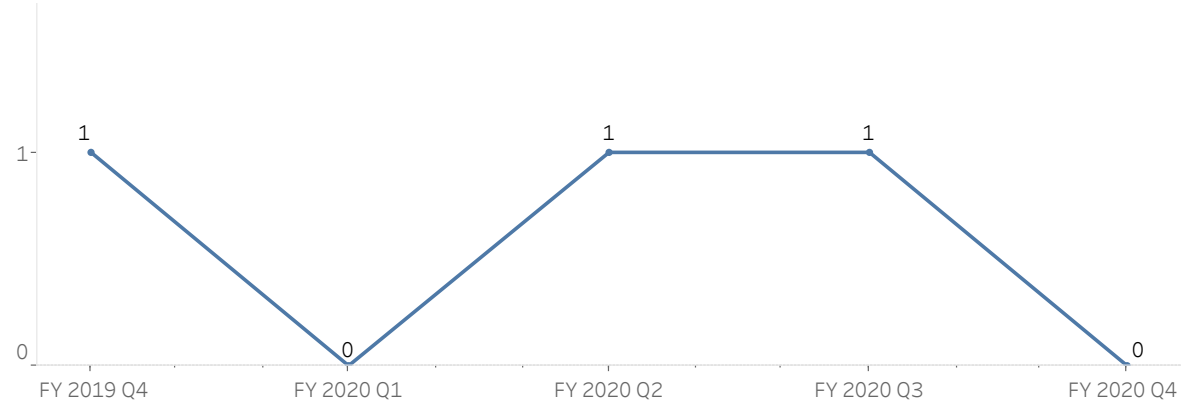


FROM 1
0

Inundation or inrush of any substance

Inundation and inrush is a low frequency, high consequence hazard, particularly in underground mining. Incidents often involve inrushes of water or inundation by denser materials (sand or rock). The potential to cause multiple fatalities in a single event like at Gretley Colliery in 1996, make this a principal hazard in NSW.

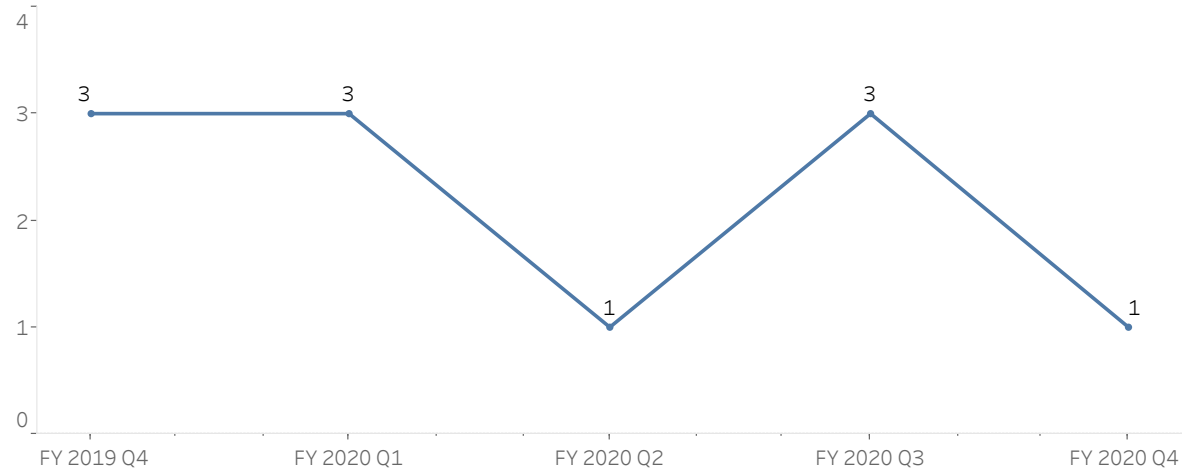
FIGURE 13. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD INUNDATION OR INRUSH APRIL 2019 TO JUNE 2020



Mine shafts and winding systems

Mine shaft integrity and the operation of winding systems require specific focus. The safe movement of material and workers up/down mine shafts is hazardous and has the potential to impact on the safety of multiple workers at a mine.

FIGURE 14. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD MINE SHAFTS AND WINDING SYSTEMS APRIL 2019 TO JUNE 2020



DANGEROUS INCIDENT – DOLLY CAR FAILS TO STOP

A deputy was travelling down a drift in a winder when he stopped the dolly car to inspect conveyor rollers. In line with normal practice, he released the direction controller (joystick) to bring the dolly car to a stop, but the dolly car continued to travel at normal speed until the deadman foot switch was released. Upon release of the deadman switch, the dolly car came to a controlled stop.

The deputy drove back up the incline a short distance to see if the fault could be replicated while travelling uphill. The dolly car stopped as normal. The deputy then drove down the incline and the fault returned. He was able to replicate the fault a further two times whilst heading down the incline.

The dolly car was returned to the surface docking station where it is was isolated and tagged out of service.

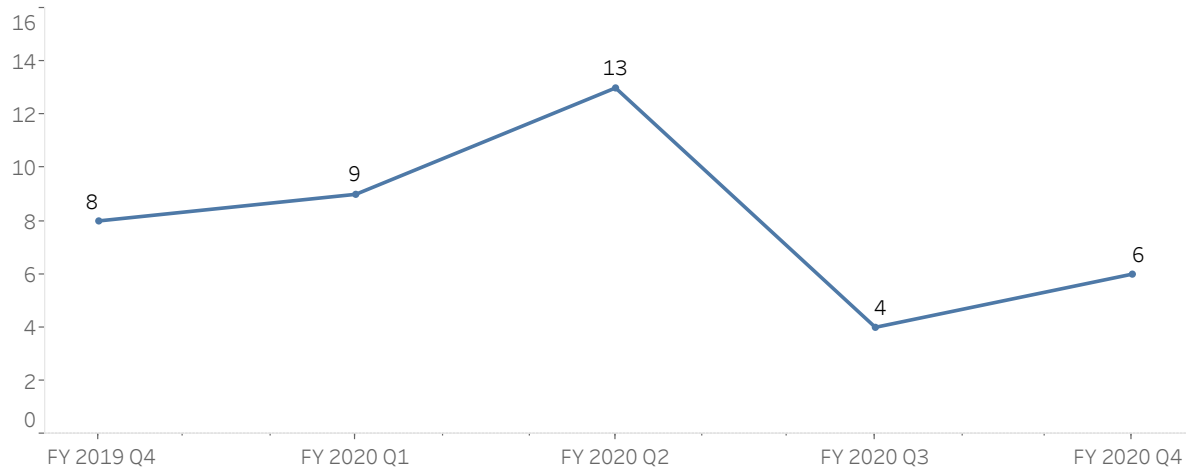
There were no injuries, the scene was preserved, and an investigation commenced. Mechanical fatigue of a joystick component (fixing screw) was found to be the root cause of the incident.

Spontaneous combustion

6 FROM 4

While spontaneous combustion (of coal) is a hazard exclusive to the coal sector, the consequences have the potential to cause multiple fatalities and devastate entire communities.

FIGURE 15. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD SPONTANEOUS COMBUSTION APRIL 2019 TO JUNE 2020



DANGEROUS INCIDENT – SPONCOM EVENT DETECTED

In May a spontaneous combustion event was reported at a coal mine. It is likely the event occurred on the return side of the maingate goaf seal, in the chain pillar between the bleeder and installation face.

In response to the event, the mine initiated its spontaneous combustion management plan which included:

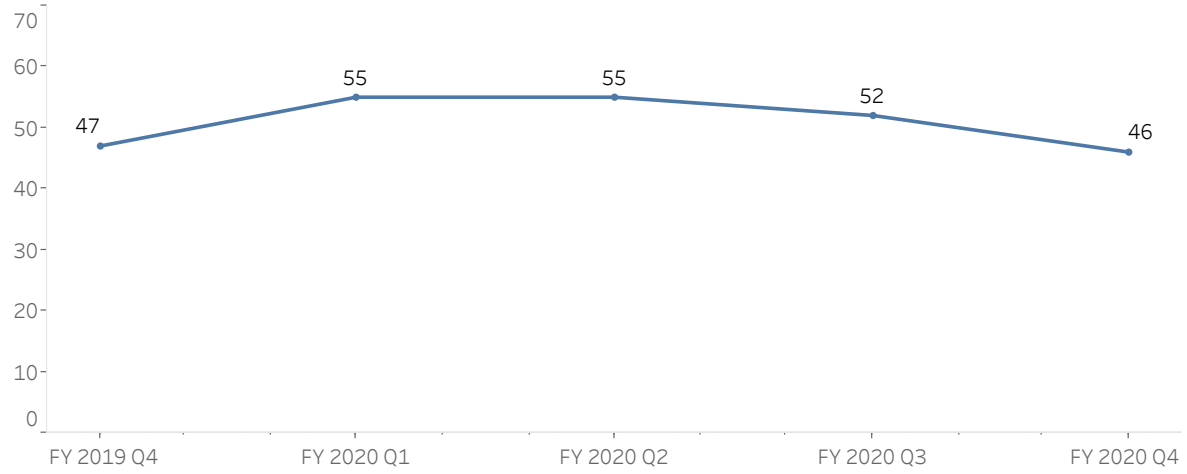
- Use of high strength (FB200) concrete seals.
- Pressure grouting of the ribs at the seal site (carried out after the longwall moved outbye, to reduce the likelihood of the abutment pressure affecting the rib stability and integrity of the grout).
- Injection of N_2 into the goaf approximately 300m inbye of the face.
- Preparation of a weekly spontaneous combustion report reviewed by a spontaneous combustion expert consultant.
- Weekly seal inspections, with reports prepared on each seal inspected.

An investigation is continuing to determine the exact cause.

Roads or other vehicle operating areas

Vehicle movements in and around mine sites, require specific design considerations and controls, to ensure that collisions and other vehicular accidents do not occur and place workers lives at risk. The high volume of vehicular interactions on mine sites and the size of the mobile plant utilised classifies this as a principal hazard in NSW.

FIGURE 16. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD ROADS OR OTHER VEHICLE OPERATING AREAS APRIL 2019 TO JUNE 2020



DANGEROUS INCIDENT – INATTENTION LEADS TO DOZERS COLLIDING

Two dozers collided when preparing coal. One dozer was ripping when it hit the side of the other dozer, that was pushing. The operator of the dozer that was ripping was looking backwards, away from the other dozer, at the time the incident occurred. The blade of the ripping dozer was raised, damaging the access platform and ladder assembly of the other dozer.

Recommendations include:

- Mines must conduct risk assessments on dozer operations and identify, document and implement effective controls for all risks, including risks associated with dozers operating perpendicular to one another.
- Supervisors must be able to determine that controls are in place and that dozer operators are using them effectively.
- Dozer operators should always maintain situational awareness and pay attention to the movement and proximity of other machinery.
- Ground implements (blades and rippers) should be kept as low to the ground as possible during operation.

Related alerts and bulletins:

- SB19-10 Dozer incidents increase despite warnings
- SB19-01 Rise in dozer incidents putting operators at risk

DANGEROUS INCIDENT – SPEED AND LOAD VARY BRAKING CHARACTERISTICS

A loaded, articulated haul truck was travelling down the main entry road of a quarry. The road was on a decline and was sealed. The driver tried to slow the truck using the retard brake, but the truck didn't slow sufficiently. The driver used the foot brake, but the wheels on the truck locked up, causing the truck to slide sideways and overturn. The driver was inexperienced, having only operated the truck for one week before the incident. The truck was travelling about 50km/h. The driver was not injured.

Recommendations include:

- Consideration should be given to the characteristics of mobile plant, including stopping distances, manoeuvrability and operating speeds for both the loaded and unloaded vehicle, when developing control measures to manage the risks to operating vehicles.
- Mines should consider the use of speed limiting devices and the operating range of retarder systems.

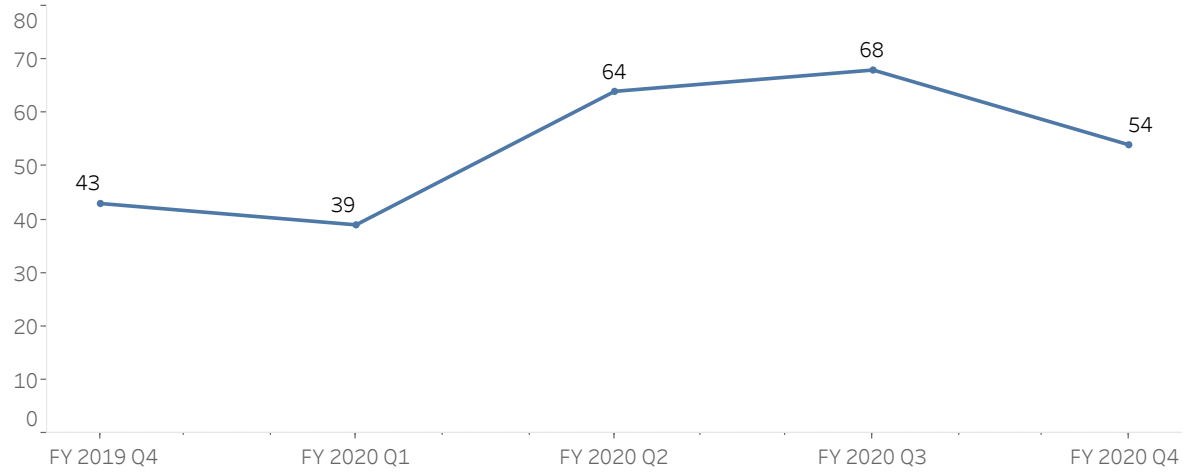
Related alerts and bulletins:

- SB17-01 Industry reports more truck rollover incidents
- Articulated truck rollovers and falls from mobile plant

Fire or explosion

This principal hazard includes risk associated with all sources of flammable, combustible and explosive substances and materials in the working environment. A common source of these incidents are fires on mobile plant (at both underground and surface operations). This principal hazard is distinct from the hazards covered in the explosives control plan.

FIGURE 17. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD FIRE OR EXPLOSION JANUARY 2019 TO MARCH 2020



DANGEROUS INCIDENT – FIRE FLARES ON EXCAVATOR

A worker saw smoke coming from a sound suppression box on top of a hydraulic cooler room, on an excavator. The worker manually activated the fire suppression system and a water cart was also used to extinguish the fire. The excavator had undergone maintenance earlier in the day, and fish plates had been welded onto the bottom of the sound suppression box. The excavator had been idle for about an hour before starting up.

Recommendations include:

- Inspections conducted after maintenance, particularly when hot work has been undertaken, should identify new hazards that may have been inadvertently introduced as a result of that task. Appropriate controls should be put in place to manage the risks.

DANGEROUS INCIDENT – FIRE FORCES WORKERS TO WITHDRAW

The operator of an underground dump truck saw flames coming from an engine bay. He tried to activate the fire suppression system but was unsuccessful. He immediately exited the cabin and retreated to the crib to report the incident. Two other workers in the area tried to extinguish the fire with hand-held fire

extinguishers but were unsuccessful. The mine initiated its emergency response procedures, and all workers retreated to fresh air bases. All workers were subsequently withdrawn to the surface. The mine's fire and rescue team members re-entered the mine and successfully extinguished the fire.

Vehicles used in underground mines must be rigorously assessed regarding the risk of fire. An assessment program undertaken by the Resources Regulator in 2019 focused on the contribution of maintenance practices to plant fires. The program identified significant deficiencies regarding fire risk assessments.

Related alerts and bulletins:

- SA19-02 Non-metallic materials add fuel to underground truck fire
- Preventing fires on mobile plant

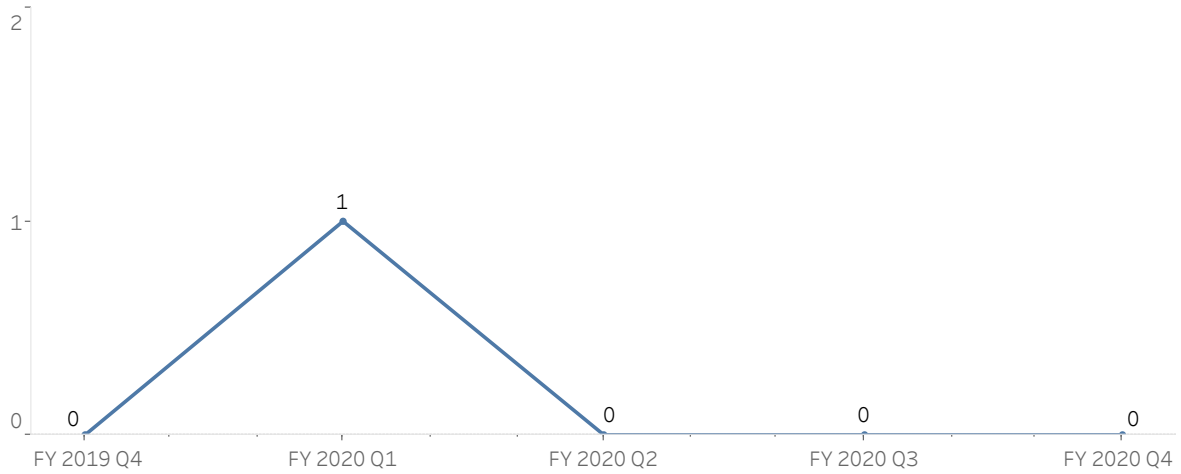
This incident also highlights the importance of emergency response procedures and their timely activation. Mine and petroleum site operators are reminded that effective implementation of Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 emergency management and information, training and instruction requirements will have a significant impact on keeping workers safe in an emergency.

For further information refer to our dedicated web page fires on mobile plant.

Gas outbursts

Gas outbursts are not a high frequency hazard event, but their often sudden and violent nature, has the potential to cause fatalities to workers nearby. This hazard also includes the liberation of gases that can asphyxiate, explode or cause a fire. These circumstances make this a principal hazard in NSW.

FIGURE 18. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD GAS OUTBURSTS APRIL 2019 TO JUNE 2020



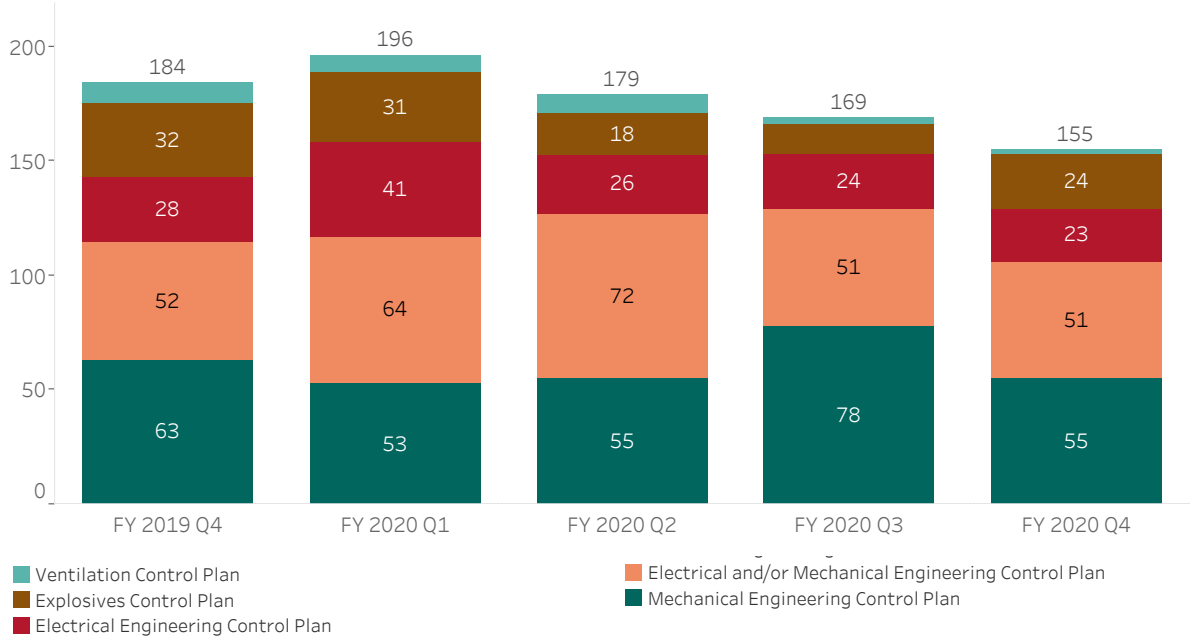
Principal control plans

The Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 specifies principal control plans for managing certain risks associated with hazards at mine and petroleum sites.

There are seven principal control plans specified in the Regulation.

The chart below presents a further breakdown of numbers of incident notifications received by quarter related to principal control plans as defined in clauses 3 and 26 of the Regulation.

FIGURE 19. INCIDENT NOTIFICATIONS RECEIVED BY PRINCIPAL CONTROL PLAN APRIL 2019 TO JUNE 2020



Health control plan

The health control plan covers health hazards that workers may be exposed to. These include (but are not limited to); fatigue, dust, noise, vibration, hazardous substances, radiation.

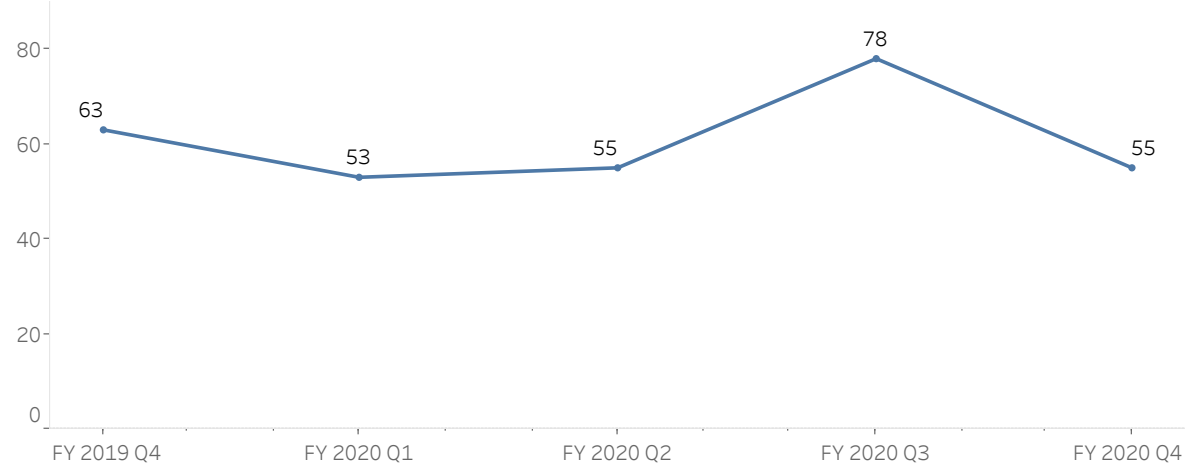
There were no incidents relating to health control plans this quarter.

FROM 78
55

Mechanical engineering control plan

The mechanical engineering control plan covers 'lifecycle' risks associated with mechanical hazards (vehicles, plant and mechanical systems and structures), that workers may be exposed to. This includes risks associated with pressurised fluids.

FIGURE 20. INCIDENT NOTIFICATIONS RELATED TO THE MECHANICAL ENGINEERING CONTROL PLAN APRIL 2019 TO JUNE 2020



SERIOUS INJURY – MECHANICAL FAILURE LEADS TO HEAD INJURY

A boilermaker was conducting repairs to a jaw crusher and welded a lug to the upper centre portion of the fixed plate before trying to lift it out using an excavator and lifting attachments. The plate appeared to be stuck so the lift was stopped, but tension remained on the lifting equipment. While standing on the crusher platform, the boilermaker leaned over to see what was preventing the plate coming free. At that point, the welded lug broke away and hit the boilermaker's hard hat, causing damage to the hat, which in turn caused an eight-centimetre cut to the boilermaker's forehead. Without protection from the hard hat, the consequences could have been far more serious.

Recommendations include:

- Mine operators should review how workers and supervisors are trained in recognising the potential hazards associated with all energy sources, including the stresses and strains introduced by lifting equipment on plant. This is especially important when there is the potential for unexpected stored energy to be released without warning. In this instance, the hazard introduced by welding a temporary lifting lug and connecting it to lifting equipment was not identified, therefore the risk of the weld failing was not assessed.

SERIOUS INJURY – ENTANGLEMENT LEADS TO FRACTURES

An operator was cleaning a belt press filter when he became entangled between a roller and the filter cloth. He could not free himself and remained with his arm trapped by the rotating apparatus until released by a supervisor. The operator suffered arm fractures, a serious laceration to the top of his left forearm and an abrasive type burn to his left lower forearm.

Recommendations include:

- Under no circumstances should guards be removed, or work carried out on rotating equipment, without the equipment being shut down and correctly isolated before work commences.
- Where limit switches are identified as a control, mines should ensure that they are installed and operational.

SERIOUS INJURY - FAILURE TO ISOLATE LEADS TO AMPUTATION

A contract stope charger removed a guard and was adjusting the hose pusher mechanism on a production charge-up unit when an operator moved the mechanism in the charge basket. The stope charger's fingers were caught in the chain sprocket, resulting in the partial amputation of his index finger and the loss of the tips of his second and third fingers.

Recommendations include:

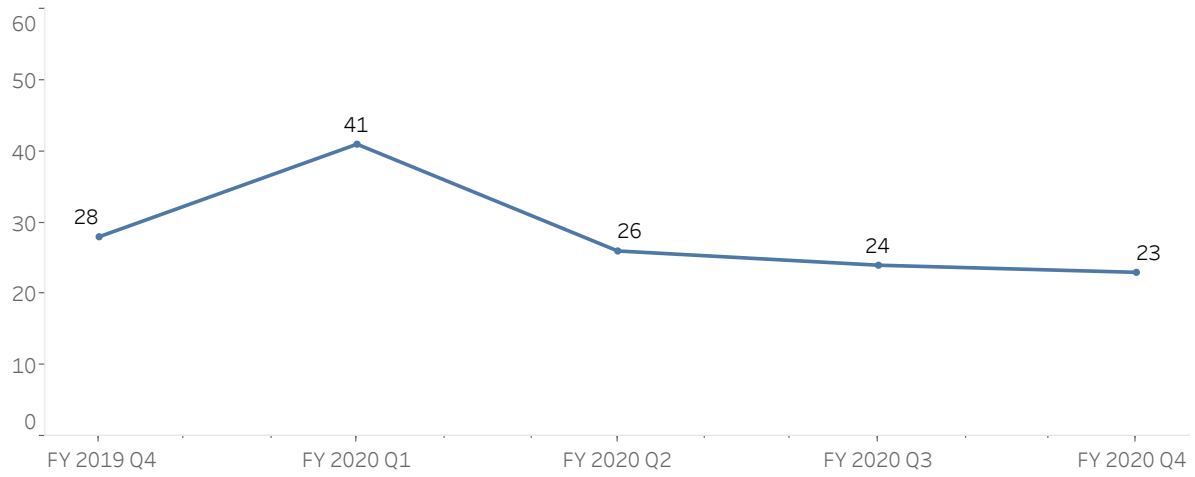
- Isolation and control of all energy sources from plant is essential when adjustments are being undertaken.
- Engineering controls should be implemented to allow regular tasks to be conducted without the need to remove control measures (guards).
- Mechanical engineering control plans must set out the control measures for risks associated with moving components on plant.

FROM 24
23

Electrical engineering control plan

The electrical engineering control plan covers 'lifecycle' risks, associated with electrical hazards (supply, vehicles, plant or infrastructure), that workers may be exposed to.

FIGURE 21. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL ENGINEERING CONTROL PLAN APRIL 2019 TO JUNE 2020



DANGEROUS INCIDENT – ISOLATION FAILURE

An apprentice electrician suffered an electric shock when installing a bypass switch in a 240Vac electrical circuit. An isolation was put in place upstream and the cable was cut. As the apprentice was stripping the cable, he felt a tingling sensation and the electrician confirmed the presence of about 100 volts. A downstream uninterruptible power supply (UPS) was not isolated when the work commenced and a back-feed from the UPS was believed to be the source of the 100V.

Recommendations include:

- Any isolation procedure should consider all potential sources of hazardous energy.
- Electrical isolations should be especially mindful of back-feeds, stored charges, induction and stored energy in circuit breaker springs.
- Test for dead verification tasks should then be performed to address each of the potential sources before starting work.

DANGEROUS INCIDENT – SIMULTANEOUS WORK LEADS TO SHOCK

A fitter suffered an electric shock while using a Hytorc unit to torque bolts on the chassis of a truck. At the same time, a welder was carrying out air arc gouging on the truck. A mine investigation showed that air arc gouging generates an induced voltage into the frame of the truck.

Recommendations include:

- When undertaking welding activities on truck bodies in a workshop, an earth bond cable should be installed between the truck body and the building earth.
- It is also recommended that when air arc gouging is being undertaken on truck bodies, no other tasks involving contact with the truck should be undertaken simultaneously.

Related alerts and bulletins:

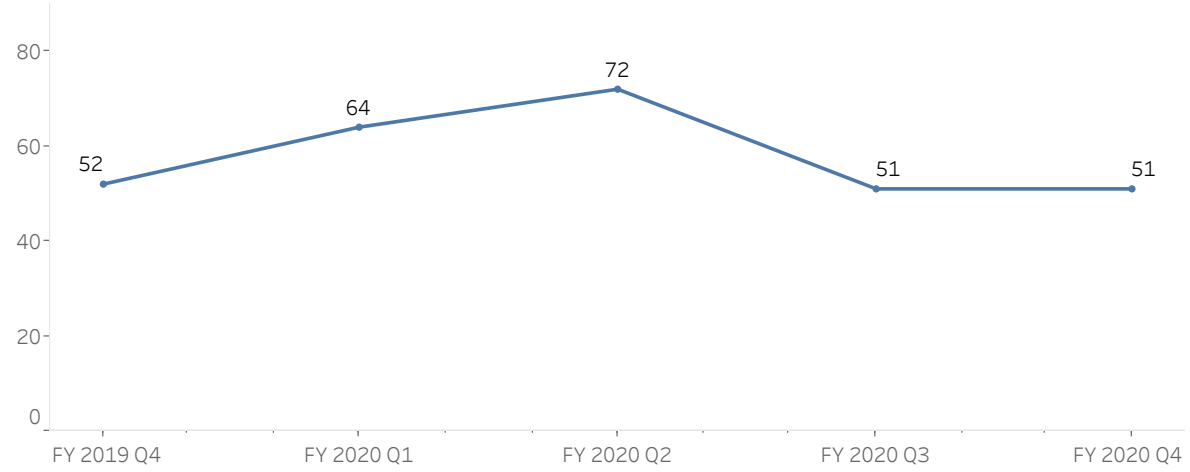
- SB19-03-Welding related electric shocks increase
- NSW Resources Regulator Information Sheet No 2: Basic welding practices

Electrical and Mechanical control plans

NO CHANGE
51

Notified incidents may relate both electrical and mechanical control plans

FIGURE 22. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL AND/OR MECHANICAL CONTROL PLAN APRIL 2019 TO JUNE 2020

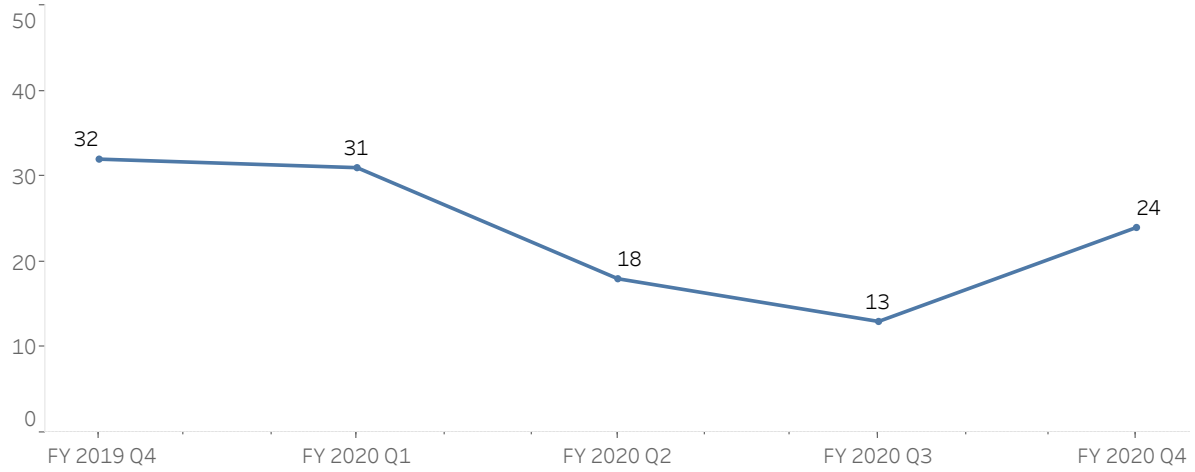


Explosives control plan

24
FROM 13

The explosives control plan covers risks associated with the use and management of explosives hazards, that workers may be exposed to. This includes incidents involving 'flyrock'.

FIGURE 23. INCIDENT NOTIFICATIONS RELATED TO THE EXPLOSIVES CONTROL PLAN APRIL 2019 TO JUNE 2020

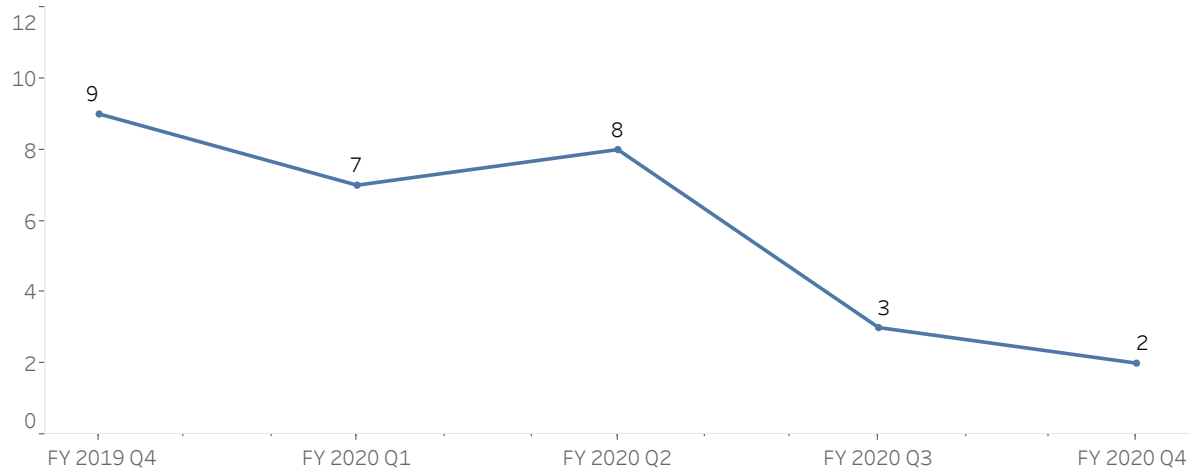


Ventilation control plan

FROM 3
2

A ventilation control plan covers risks associated with ventilation in underground mines. This includes incidents involving failed atmospheric conditions and where trigger action response plans may have been activated.

FIGURE 24. INCIDENT NOTIFICATIONS RELATED TO THE VENTILATION CONTROL PLAN APRIL 2019 TO JUNE 2020



In the spotlight
WHS undertaking leads to better mental health tools

In December 2016, a contract haulage truck driver was fatally injured following an incident at Bloomfield's Rix's Creek Mine. As part of an enforceable undertaking, Bloomfield has developed an animation highlighting the safety lessons learnt from the incident. The incident video is available by clicking here.

Workplace fatalities and other traumatic workplace incidents can have far-reaching impacts. This is particularly true when it comes to mental health.

As part of the WHS undertaking, the Bloomfield Group developed The Mental Safety Toolkit - 'Protecting Your Mental Health: The Before, During and After Program'. The Mental safety video is available by clicking here.

The Mental Safety Toolkit was developed to help businesses be better prepared to manage mental health effectively in their workplace. With a specific focus on providing support during and after a serious incident, it puts resources directly into the hands of business via a free App. You can download the Mental Safety App via the App Store.

To help manage mental health during the COVID-19 pandemic, the Mental Safety App has been updated to include a new category specifically dedicated to COVID-19. All the information is vetted by professionals in the field and will be updated as more information is identified.

The Mental Safety Toolkit

In the spotlight
'Pandemic' scenario-based emergency planning

The NSW Resources Regulator's emergency planning and response team has recently coordinated two emergency planning exercises with industry, emergency services and other local agencies. The team worked with western NSW mines and Local Emergency Management Committees on scenarios based on an underground mine collapse and rescue.

The planning exercises were based at:

- Broken Hill on 28 April 2020
- Cobar on 16 June 2020.

The emergency discussion exercise was conducted by video conference and explored a multi-agency, multi-day underground mine emergency scenario in a COVID-19 operating environment.

Observations

- All mines were very clear on the COVID-19 specific controls, introduced at their sites.
- All emergency response agencies had robust pre-shift assessment processes to ensure fitness for work, which tied in well with the mine procedures upon arrival at the mines.
- Long-standing relationships between mines and emergency services in the regional areas was evident and assisted in the overcoming the additional challenges presented by the COVID-19 environment during a complex emergency event.

Specific challenges

- Added risk - The management of coordinating a mine and multi-agency incident management team without risking the potential exposure of multiple persons to COVID-19.
- Crowd complications - The difficulties in managing large numbers of family members (and others), both on and off site, during a large emergency crisis in a COVID-19 environment.
- Communication control – Addressing the increased data and communication needs required to effectively coordinate the response during COVID-19 in areas with limited and challenging connectivity.
- Ongoing need for scenario-based planning - Some integration and information difficulties were identified in understanding, both mine site emergency response capabilities and state rescue coordination arrangements. This highlighted the need for ongoing consultation, engagement and scenario testing, between mines and local emergency services.

Sector profiles

NSW Resources Regulator

SECTOR REPORTING

Coal mines

Opencut, underground and coal preparation plants

Large mines

METALLIFEROUS AND QUARRIES

Quarries that produce >900,000 tonnes pa and large opencut or underground metalliferous mines

Small mines

METALLIFEROUS, QUARRIES AND OTHER GEMSTONES

Quarries and other mine types (e.g. sand, clay, lime) that produce <900,000 tonnes pa, opencut or underground metalliferous mines and gemstone mines

Petroleum and geothermal sites

Onshore petroleum and geothermal productions and exploration sites

Opal mines

Opal mines at Lightning Ridge and White Cliffs

Exploration sites

Exploration sites (excluding petroleum)

Non-mines

Includes many manufacturers (including OEMs), suppliers, designers, importers, licence holders and registration holders

Coal sector

Safety incident notifications

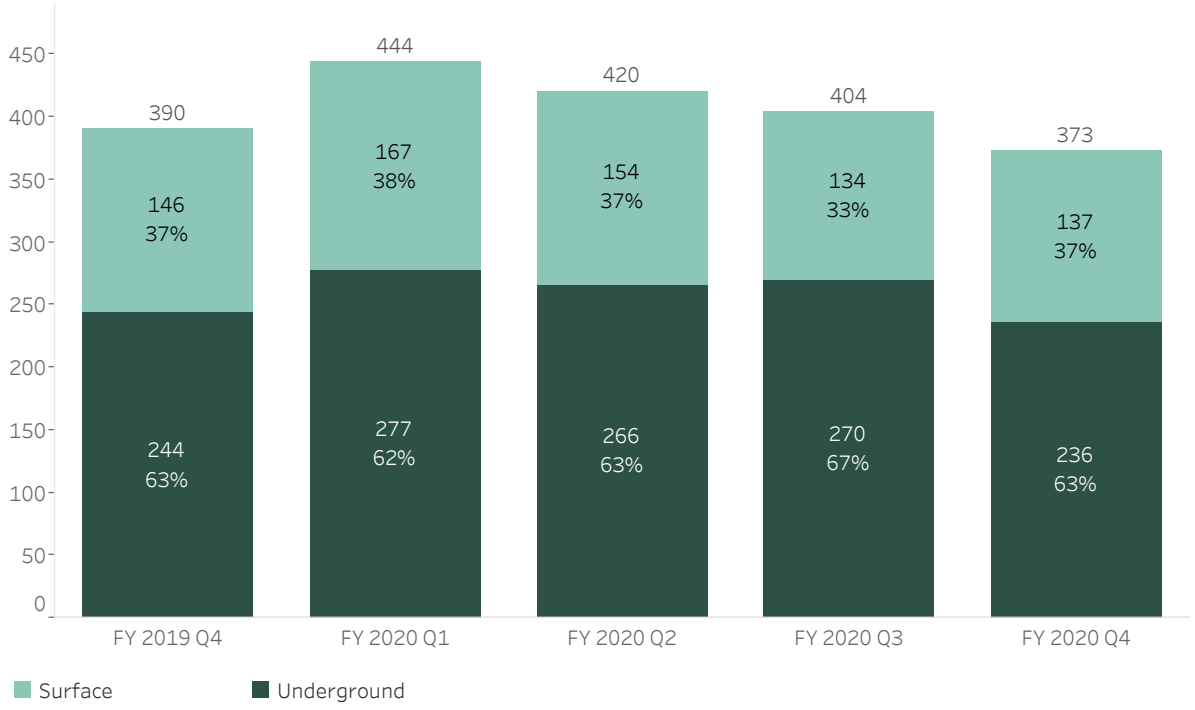
Under work health and safety legislation, mine operators must notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends. As presented in the table below, incident rates in the coal sector have remained relatively stable during the past five quarters.

TABLE 4. COAL SECTOR INCIDENT NOTIFICATION RATES APRIL 2019 TO JUNE 2020

MEASURE	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Incidents	390	444	420	404	373	406
Active mines	123	122	128	127	122	124
Incident rate per active mine	3.17	3.64	3.28	3.18	3.06	3.27
Mines that notified incidents	54	60	55	61	49	56
% of mines notifying an incident	44%	49%	43%	48%	40%	45%
Incident rate per notifying mine	7.22	7.40	7.64	6.62	7.61	7.30

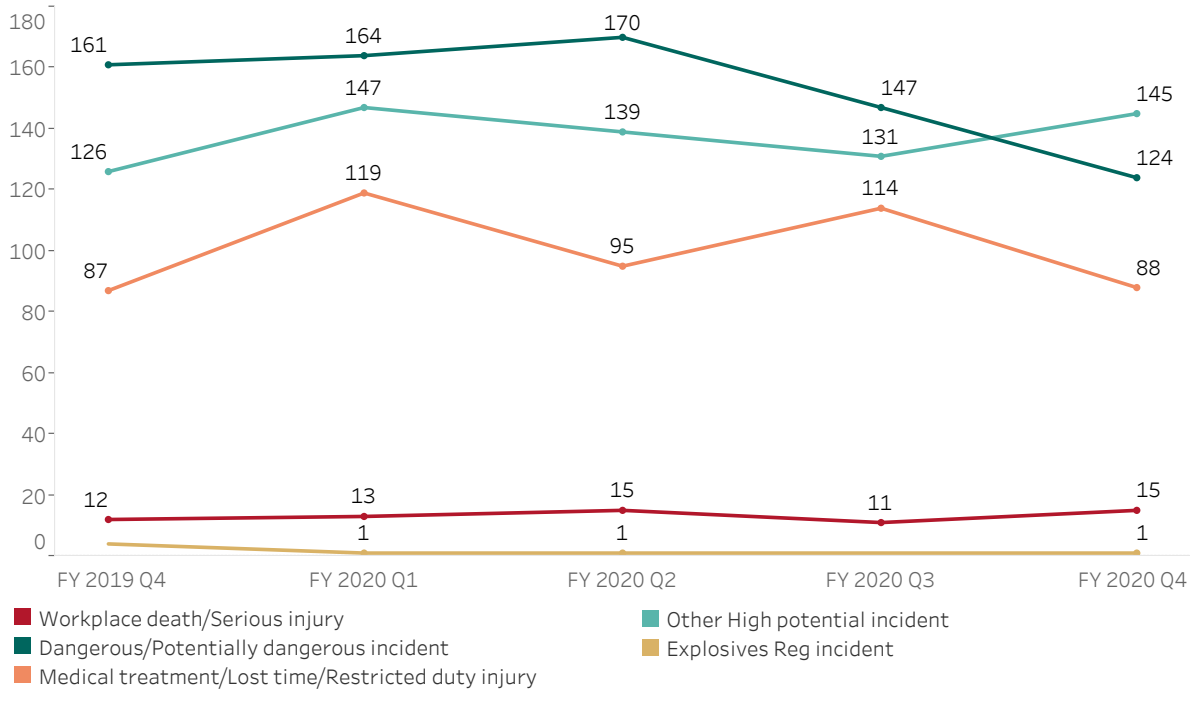
The following graph shows the proportion of safety incident notifications received from surface and underground coal operations.

FIGURE 25. COAL SECTOR SAFETY INCIDENT NOTIFICATIONS BY OPERATION TYPE APRIL 2019 TO JUNE 2020



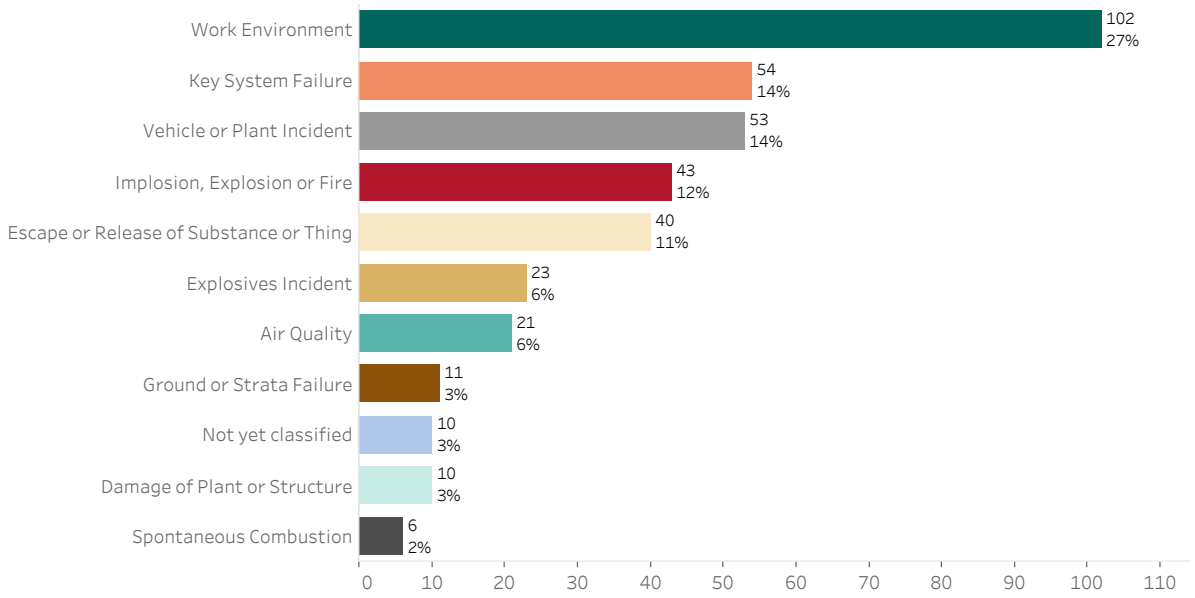
The graph below presents a breakdown of safety incidents notified to the NSW Resources Regulator by the coal sector by the requirement to report. For two consecutive quarters decreasing numbers of dangerous and potentially dangerous incidents were notified by the sector.

FIGURE 26. COAL SECTOR SAFETY INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT APRIL 2019 TO JUNE 2020



For compliance monitoring and planning purposes, the NSW Resources Regulator classifies notified safety incidents by hazard. Of the 373 safety incident notifications received in the current quarter (FY 2020 Q4), 27% were classified as work environment. This includes (but is not limited to) body stressing, falls, trips and slips, being hit by moving objects and hitting objects with a part of the body. Key system failure incidents are those that include (but not limited to) explosion protection, winder and site power failures.

FIGURE 27. COAL SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED BY INCIDENT TYPE APRIL 2020 TO JUNE 2020



Large mines sector

Safety incident notifications

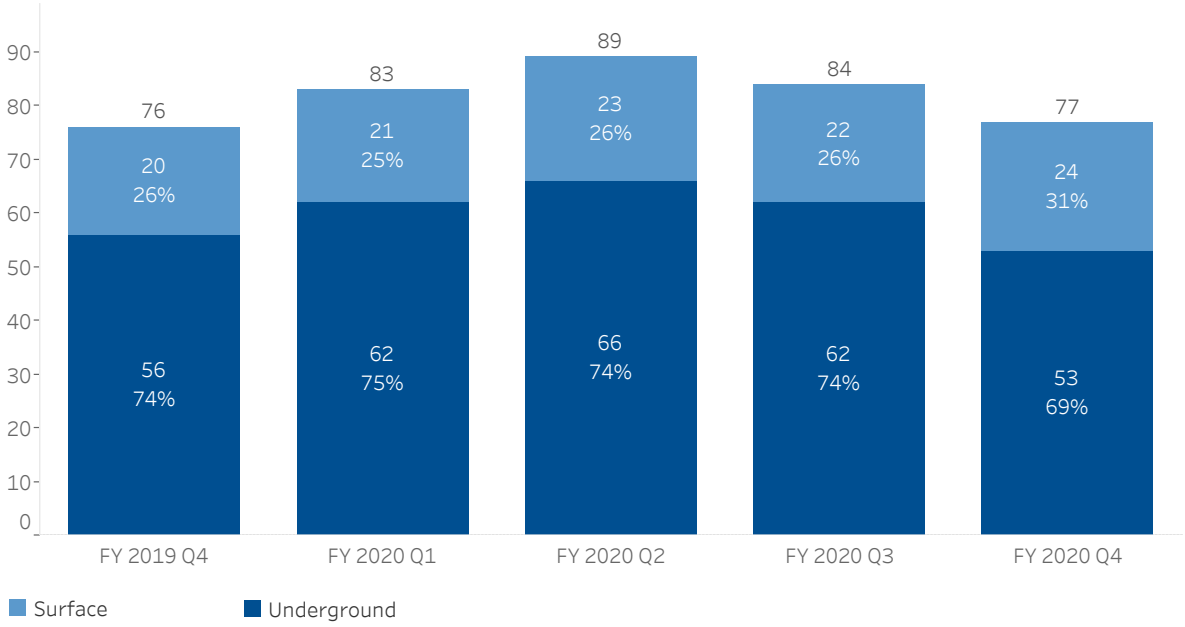
Under work health and safety legislation, mine operators must notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends. As presented in the table below, incident rates in the large mines and quarries sector have remained relatively stable during the past five quarters.

TABLE 5. LARGE MINES AND QUARRIES SECTOR INCIDENT NOTIFICATIONS RECEIVED RATES APRIL 2019 TO JUNE 2020

MEASURE	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Incidents	76	83	89	84	77	82
Active mines	38	37	38	39	39	38
Incident rate per active mine	2.000	2.243	2.342	2.154	1.974	2.14
Mines that notified incidents	25	22	24	24	23	24
% of mines notifying an incident	66%	59%	63%	62%	59%	62%
Incident rate per notifying mine	3.040	3.773	3.708	3.500	3.348	3.47

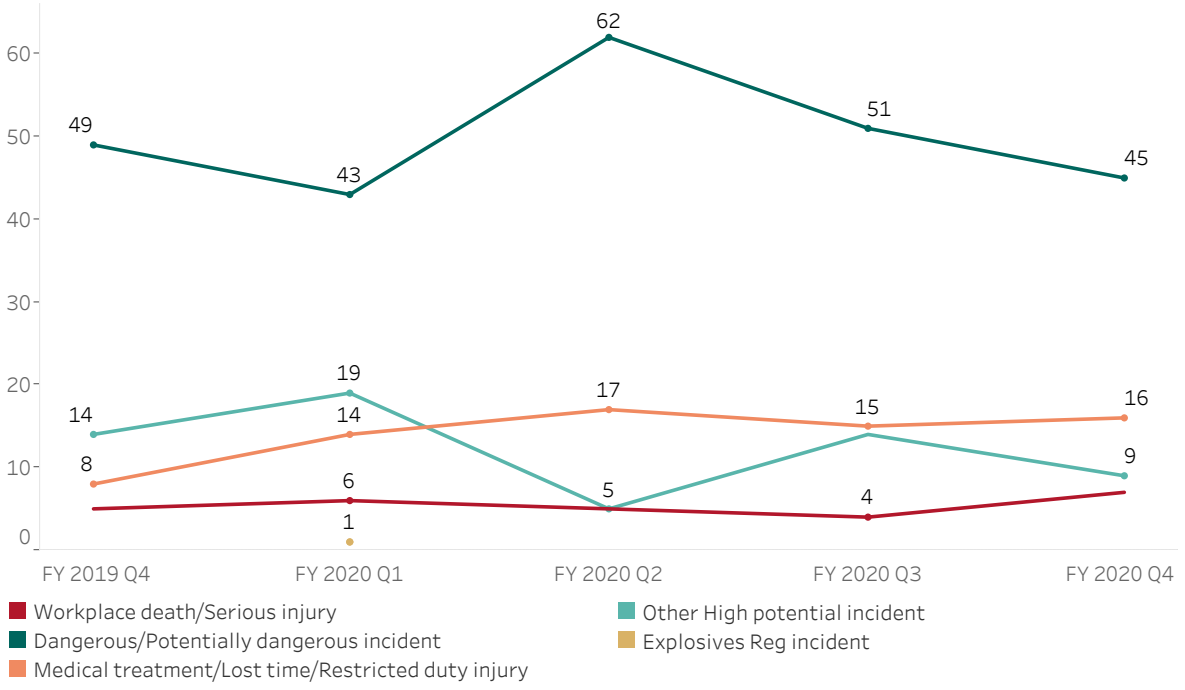
The following graph shows the proportion of safety incidents notified by surface and underground large mines and quarries. Typically, approximately 70% of incidents each quarter were notified by underground large mines and quarries.

FIGURE 28. LARGE MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS BY OPERATION TYPE APRIL 2019 TO JUNE 2020



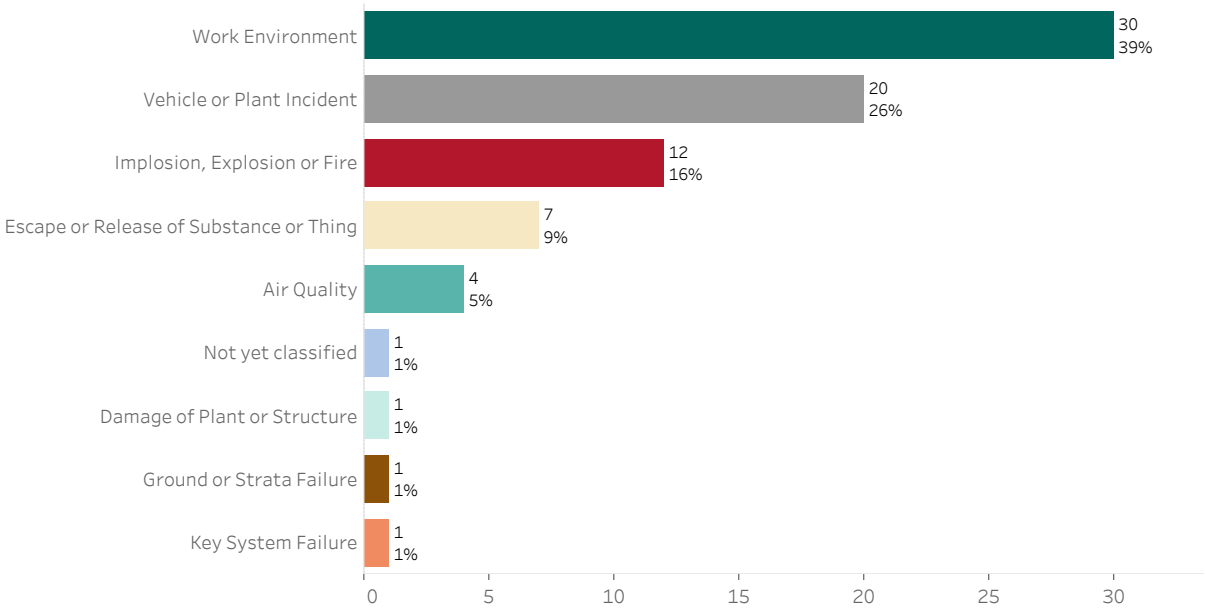
The graph below presents a breakdown of safety incidents notified to the NSW Resources Regulator by the large mines and quarries sector by requirement to report. For two consecutive quarters decreasing numbers of dangerous and potentially dangerous incidents were notified by the sector.

FIGURE 29. LARGE MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED BY REQUIREMENT TO REPORT APRIL 2019 TO JUNE 2020



For compliance monitoring and planning purposes, the NSW Resources Regulator classifies notified safety incidents by hazard. Of the 77 notified safety incidents in the current quarter (FY 2020 Q4) almost 40% were classified as work environment. This includes (but is not limited to) body stressing, falls, trips and slips, being hit by moving objects and hitting objects with a part of the body. Key system failure incidents are those that include (but not limited to) explosion protection, winder and site power failures.

FIGURE 30. LARGE MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED BY INCIDENT TYPE APRIL 2020 TO JUNE 2020



Small mines sector

Safety incident notifications

Under work health and safety legislation, mine operators must notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends.

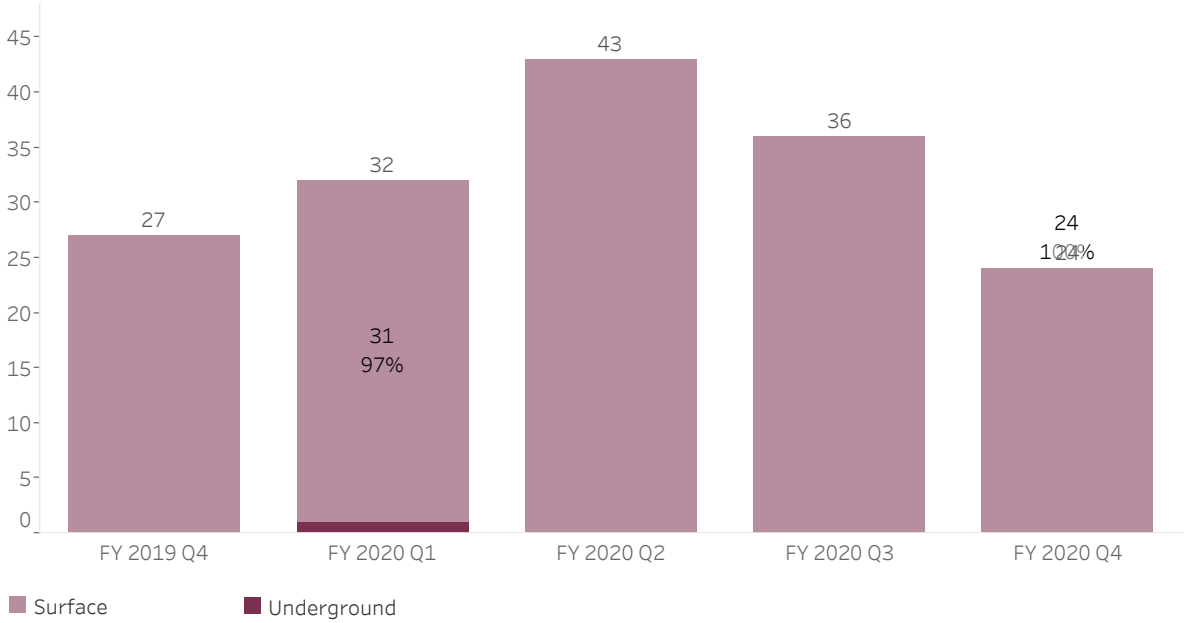
As presented in the table below, the small mines and quarries sector sustained relatively low incident reporting rates across the five quarters in the reporting period.

TABLE 6. SMALL MINES AND QUARRIES SAFETY INCIDENT NOTIFICATIONS RECEIVED RATES APRIL 2019 TO JUNE 2020

MEASURE	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Incidents	27	32	43	36	24	32
Active mines	2648	2661	2695	2683	2671	2672
Incident rate per active mine	0.010	0.012	0.016	0.013	0.009	0.012
Mines that notified incidents	20	27	35	27	21	26
% of mines notifying an incident	0.76%	1.01%	1.30%	1.01%	0.79%	0.97%
Incident rate per notifying mine	1.350	1.185	1.229	1.333	1.143	1.248

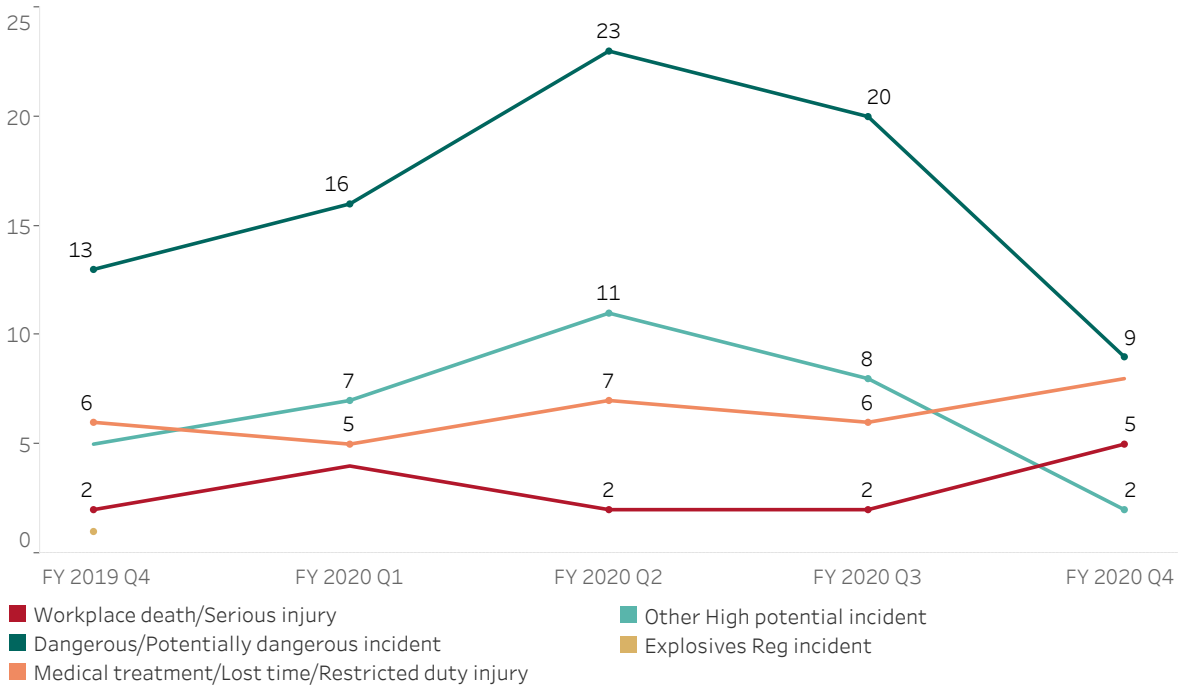
The graph below shows the proportion of notified safety incidents by the small mines and quarries sector by operation type. Consistent with the sector's composition, almost all safety incidents were notified by surface operations.

FIGURE 31. SMALL MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED BY OPERATION TYPE APRIL 2019 TO JUNE 2020



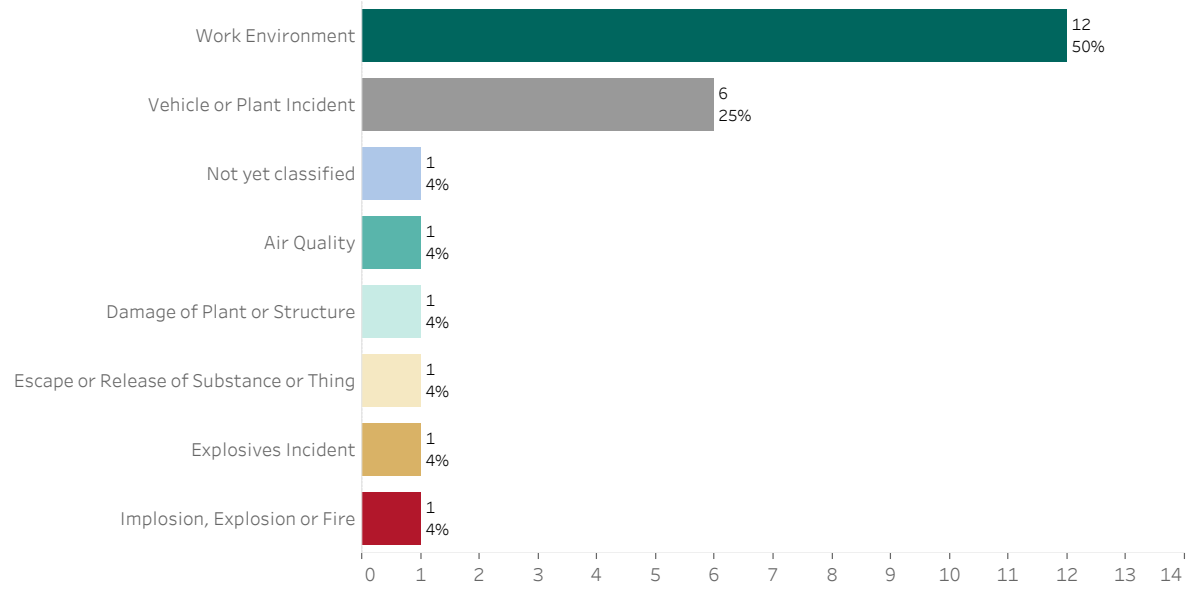
The following graph presents a breakdown of safety incidents notified to the NSW Resources Regulator by the small mines and quarries sector by requirement to report. For three consecutive quarters decreasing numbers of dangerous and potentially dangerous incidents were notified by the sector.

FIGURE 32. SMALL MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED BY REQUIREMENT TO REPORT APRIL 2019 TO JUNE 2020



For compliance monitoring and planning purposes, the NSW Resources Regulator classifies notified safety incidents by hazard. Of the 24 notified safety incidents in the current quarter (FY 2020 Q4) half were classified under work environment. This includes (but is not limited to) body stressing, falls, trips and slips, being hit by moving objects and hitting objects with a part of the body. Key system failure incidents are those that include (but not limited to) explosion protection, winder and site power failures.

FIGURE 33. SMALL MINES AND QUARRIES SECTOR SAFETY NOTIFICATIONS BY INCIDENT TYPE APRIL 2020 TO JUNE 2020



Opal mines sector

Safety incident notifications

Under work health and safety legislation, mine operators must notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends.

For a third consecutive quarter, no incidents were notified to us by the opal mine sector.

TABLE 7. OPAL MINES SECTOR SAFETY INCIDENT NOTIFICATION RATES APRIL 2019 TO JUNE 2020

MEASURE	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Incidents	1	2	0	0	0	0.6
Active mines	3,564	3,733	3,811	3,880	3,944	3,786.4
Mines that notified incidents	1	2	0	0	0	0.6

Opal sector compliance activities

The table below shows the number of notices issued per program assessment commenced in the opal mine sector during the last five quarters.

In this quarter, the NSW Resources Regulator issued 37 safety notices and conducted 39 safety program assessments. This resulted in a notice issue rate of 0.95 per assessment for the quarter.

TABLE 8. OPAL SECTOR NOTICES ISSUED AND PROGRAM ASSESSMENTS COMMENCED APRIL 2019 TO JUNE 2020

	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Safety notices issued*	46	46	29	39	37	39
Safety assessments conducted	65	70	64	85	39	64.6
Notice issue rate per assessment	0.71	0.66	0.45	0.46	0.95	0.65

*Issued under the *Work Health and Safety Act 2011*.

Petroleum and geothermal sector

Safety incident notifications

Under work health and safety legislation, mine operators must notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends.

The petroleum and geothermal sector have not notified any safety incidents during the past five quarters.

TABLE 9. PETROLEUM AND GEOTHERMAL SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED APRIL 2019 TO JUNE 2020

	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Number of incidents notified	0	0	0	0	0	0
Active mines	267	265	259	239	194	244.8

Petroleum and geothermal sector compliance activities

The table below shows the number of program assessments commenced and related notices issued by the NSW Resources Regulator in the petroleum and geothermal sites sector.

TABLE 10. PETROLEUM AND GEOTHERMAL SECTOR NOTICES ISSUED AND ASSESSMENTS COMMENCED APRIL 2019 TO JUNE 2020

	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Safety notices issued*	0	0	0	4	4	1.6
Safety assessments commenced	39	35	13	24	50	32.2
Notice issue rate per assessment	0.00	0.00	0.00	0.17	0.08	0.05

*Issued under the *Work Health and Safety Act 2011*.

Exploration sector

Safety incident notifications

Under work health and safety legislation, mine operators must notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends.

The exploration sector notified five safety incidents in this quarter.

TABLE 11. EXPLORATION SECTOR SAFETY INCIDENT NOTIFICATIONS RECEIVED APRIL 2019 TO JUNE 2020

MEASURE	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	AVERAGE
Incidents	0	0	2	2	5	1.8
Active mines	753	791	780	746	779	769.8
Mines that notified incidents	0	0	2	2	4	1.6

Exploration sector compliance activities

The table below shows the number of program assessments commenced and related notices issued by the NSW Resources Regulator in the exploration sector.

There were no program assessments conducted in FY2020 Q4.

TABLE 12. EXPLORATION SECTOR SAFETY NOTICES ISSUED AND ASSESSMENTS APRIL 2019 TO JUNE 2020

	FY 2019 Q4	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	TOTAL
Safety notices issued*	0	2	0	4	0	1.2
Safety assessments commenced	0	1	1	2	0	0.8
Notice issued rate per assessment	0.00	2.00	0.00	2.00	0.00	0.8

*Issued under the *Work Health and Safety Act 2011*.