



**NSW
Resources
Regulator**

Quarterly safety report

July to September 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. Wherever 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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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 NSW Resources Regulator monitors progress in implementing our risk-based compliance and enforcement strategy.

This report also provides information on significant mining events in New South Wales, other Australian jurisdictions and globally. It summarises safety incident notifications, compliance activities and outcomes for the quarter of July to September 2020. For selected measures, data is analysed over a 15-month period from July 2019 to September 2020.

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

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.

In this quarter, total incident notifications received by principal hazard were up 32% (149 to 198). This figure is also above the quarterly average, for the previous five quarters.

Key principal mining hazards that saw the largest rise in notifications, compared to the previous quarter were air quality, dust or other airborne contaminants, fire or explosion and ground or strata failure. The increase in dust or other airborne contaminants notifications is likely due to the halving of the workplace exposure standard for crystalline silica which came into effect on 1 July 2020.

Incident notifications received by principal control plans were up 12%, when compared to the previous quarter. The highest proportion of notifications in this category related to controls which should be identified in a Mechanical Engineering Control Plan (62), closely followed by the Electrical and/or Mechanical Control Plan (56).

This report also looks at the safety performance and regulatory activities of industry sectors: coal, large (non-coal) mines and quarries, small mines and quarries (including gemstones), opal mines, petroleum and geothermal sites, and exploration sites.

Quarterly snapshot

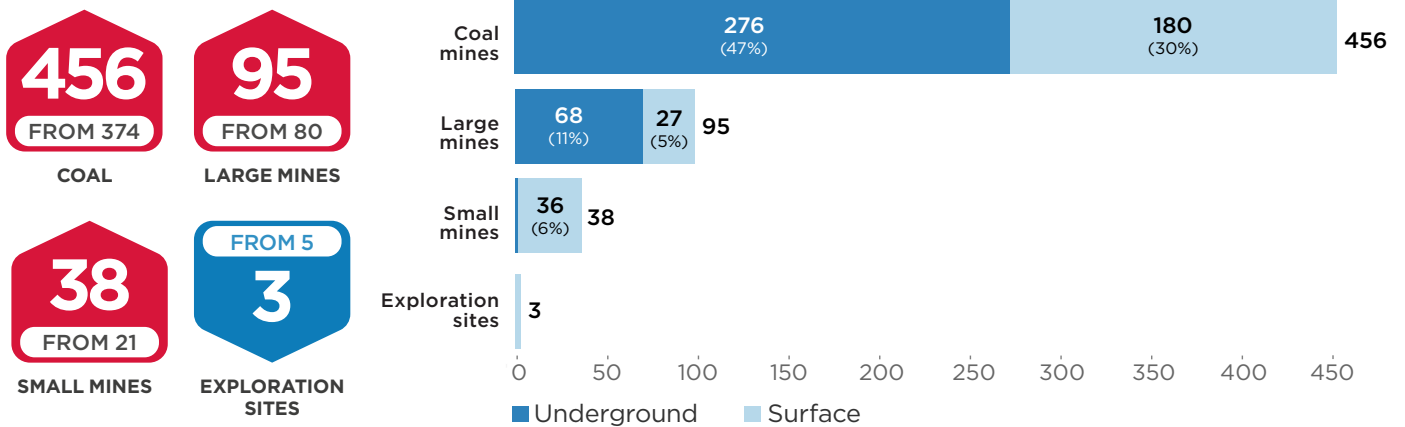
The quarterly safety performance snapshot show key measures and assist industry in the development and promotion of safe work practices on mining operations.



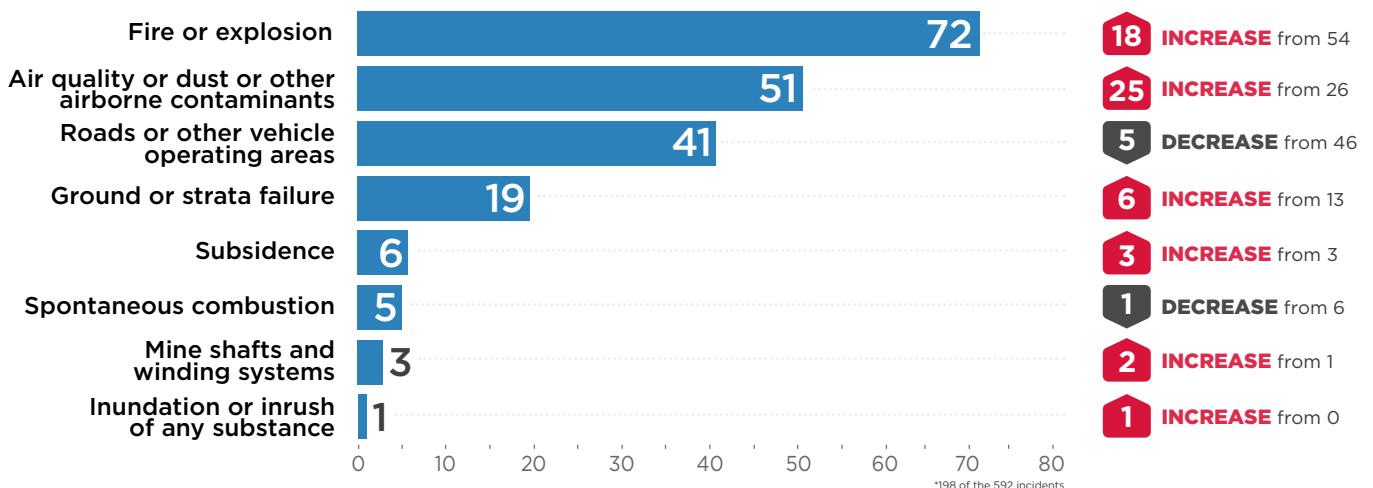
* by requirement to report as notified by mines.

The actual number of incidents, injuries and illnesses recorded may differ from original incident notifications following assessment of the notified event.

Incident notifications received by sector and operation type



Incident notifications classified by principal hazard



Quarterly snapshot

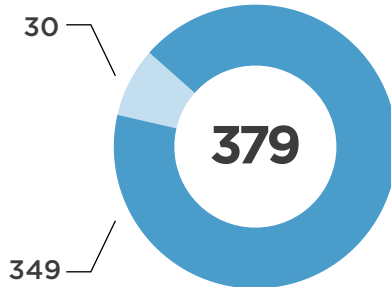
1,121

Assessments commenced

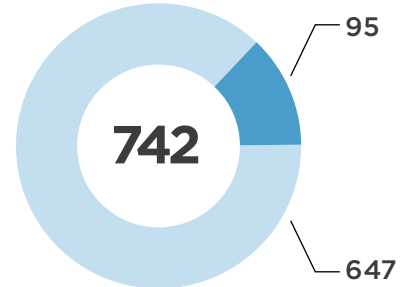
- Proactive
- Reactive



Desktop Assessments



Site Assessments



FROM 404
360

COAL MINES

175

FROM 160

LARGE MINES

327

FROM 264

SMALL MINES

81

FROM 50

PETROLEUM AND
GEOTHERMAL
SITES

78

FROM 42

OPAL MINES

4

FROM 0

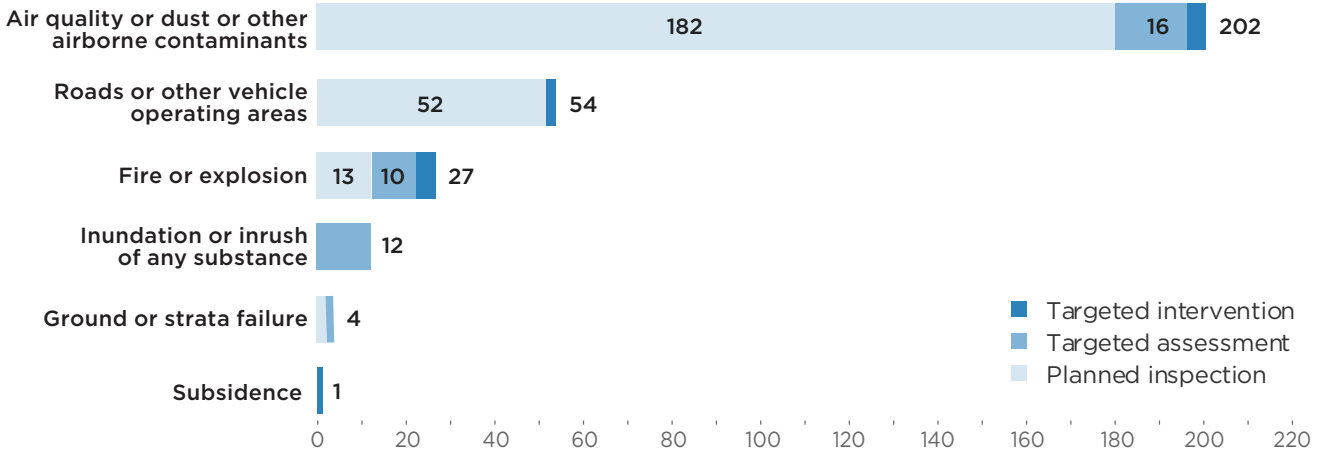
EXPLORATION
SITES

96

FROM 75

NON-MINES

Programmed site assessments conducted



764 notices issued

466 WHSA s191 improvement notices

1 WHSA s198 non-disturbance notice

222 WHS(MPS)A s23 notices of concerns

75 WHSA s195 prohibition notices

For more information and performance metrics on the New South Wales mining industry visit our website resourcesregulator.nsw.gov.au



SUBSCRIBE TO OUR INFORMATION ALERTS



SUBSCRIBE TO OUR YOUTUBE CHANNEL

National and international significant events

The 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 **June to September 2020**.

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

Fatal injuries

Australia

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 one mine/quarry related fatality reported in this quarter.

- An operator received fatal injuries when the underground loader he was operating went over the edge of an open stope and fell approximately 25 metres. There was no evidence of a bund at the top of the stope. This incident is currently under investigation.

Northern Territory

There was one mining related fatality reported in this quarter.

- A worker was operating an excavator to tow another excavator, which had broken down. A chain was attached to the chassis (frame) of the broken-down excavator and to the quick clamp of the other excavator. The excavator being towed weighed about 36 tonne. When the chain broke, it recoiled, striking the worker who was sitting in the excavator cabin. The worker was fatally injured. For further information refer to [Safety Alert](#).



International

UNITED STATES OF AMERICA

There were eight mining/quarry related fatalities published by United States of America's, Mine Safety and Health Administration (MSHA), during the quarter:

- A mining superintendent was electrocuted while attempting to reverse the polarity of a 4,160 VAC circuit by switching the leads inside an energized 4,160 VAC enclosure that contained a vacuum circuit breaker and disconnect. For further information refer to the [Fatality Alert](#).
- Two miners were loading explosives from inside an aerial lift's basket when the basket jolted upward into the mine roof, causing the death of one of the miners. For further information refer to the [Fatality Alert](#).
- A miner was injured when his arm became entangled in a stacker conveyor belt. The victim was airlifted to a trauma centre where he passed away a week later. For further information refer to the [Fatality Alert](#).
- A miner was killed while attempting to clear a material blockage. The miner entered the cone crusher to begin work when the material shifted and engulfed him. He was extracted from the crusher and taken to a hospital, where he died the next day. For further information refer to the [Fatality Alert](#).
- A miner died when he fell while attempting to close a hatch on the top of a bulk material trailer. The miner was wearing a fall protection harness, but his lanyard was not attached to a secure anchor point. For further information refer to the [Fatality Alert](#).
- Two miners were preparing a mobile track mounted jaw crusher for shipping off-site. The crusher was missing the upper wrist pin from the hydraulic cylinder that raises and lowers the right hopper extension. The right hopper extension was secured in place by wedges. The victim was removing wedges, and when a wedge was removed, the extension fell, crushing the victim. For further information refer to the [Fatality Alert](#).
- Two miners were working to hoist an electric motor from its base by anchoring a hoist to an overhead, unsecured steel pipe. The steel pipe slid out of place and struck one of the miners in the head and back. The miner died due to complications from his injuries. For further information refer to the [Fatality Alert](#).
- A truck driver attempted to adjust the brakes on his tri-axle truck while the engine was running, the automatic transmission was in drive and the parking brake was not set. The truck moved forward and fatally injured the victim. For further information refer to the [Fatality Alert](#).

Incidents by hazard



Ground or strata failure

- **(Queensland)** Two underground mine workers were preparing to bomb oversize rock in a stope draw point they were struck by a rock fall. Approximately 50kg of material fell from the back, around five metres back from the brow. Both workers were treated in hospital. For further information refer to the [Incident periodical \(June\) - Minerals and Quarries](#).
- **(Queensland)** Despite significant advances in remotely operated machinery, working around underground mine drawpoints remains hazardous. A recent review of mine practices found that there is significant variation in how effectively each mining operation assesses and deals with the risks associated with drawpoints and stope brows. For further information refer to the [Mines Safety Bulletin](#).
- **(Western Australia)** A development drill rig (Jumbo) operator and fitter were injured when a 750-kilogram rock fell from a height of about five metres from the face of an access development heading, striking both workers. The fitter suffered serious injuries. For further information refer to the [Significant Incident Report](#).
- **(Western Australia)** Personnel, including contractors, have been engaged to perform work associated with open pit wall stabilisation, wall control and geotechnical hazard remediation. Work involves personnel and specialist equipment working on or near pit walls (interim or final), using mechanical and rope access systems. Four incidents involving near miss or injuries to people working on walls have been reported since 2016. In all incidents, the consequences could have been far worse. For further information refer to the [Mines Safety Bulletin](#).





Roads or other vehicle operating areas

- **(Queensland)** A light vehicle carrying four persons, collided with a surface conveyor. There were no injuries but there was significant damage to both the vehicle and to the conveyor system. For further information refer to the [Incident periodical \(June\) - Coal Mines](#).
- **(Queensland)** A light vehicle (LV) collided with the rear trailer of a dual powered road train pulling five trailers. The LV was travelling at approximately 60kph, while the road train was traveling uphill at about 18kmph. The LV driver claimed to be distracted changing a mine radio channel but managed to take last moment evasive action to prevent collision with the rear of the truck. He instead over-corrected, swerved and hit the first and second tyres on the fifth trailer. For further information refer to the [Incident periodical \(June\) - Coal Mines](#).
- **(Queensland)** Mines and quarries must implement effective controls that prevent mobile plant and equipment from entering the exclusion zones of energised overhead powerlines. These controls must be monitored for effectiveness and communicated to workers. For further information refer to the [Mines Safety Bulletin](#).
- **(New Zealand)** A dump truck was reversing to tip its load over a tip head while a wheel loader was side-cutting material along the same face to create a windrow. The dump truck entered the tip head in a clockwise direction and, while reversing, he hit the loader bucket with the rear right side of the dump truck tray. There were no radio communications between the dump truck driver and the loader driver before or during the incident. No-one was injured. For further information refer to the [NZ Safety Alert](#).
- **(Western Australia)** Since January 2018, more than 180 interactions with windrows (or bunds) have been reported on Western Australian mine sites. These involved vehicles breaching windrows, with incidents resulting in injuries to workers and one fatality. Windrows are a safety device to prevent workers in vehicles, and those working in the areas below, from being exposed to more severe hazards when a vehicle has a loss of control. For further information refer to the [Mines Safety Bulletin](#).



Fire or explosion

- **(Queensland)** Coal mine workers at open cut sites are often not aware that flammable and toxic gases may be present and pose a significant risk during normal mining activities at open cut operations. Specific areas of concern include general awareness of flammable and toxic gas risks, knowledge and competencies for managing gas, the use and maintenance of gas monitoring systems, and the practical application of Trigger Action Response Plans (TARPs). For further information refer to the [Mines Safety Bulletin](#).

- **(Queensland)** During the installation of a steel rib bolt, frictional contact between the rotating steel bolt and a steel rib mesh strand generated enough heat to ignite methane that was present behind the plate at the installation point. For further information refer to the [Mines Safety Alert](#).
- **(Queensland)** Power to a longwall face was tripped by an automatic methane sensor located at the tailgate. The responsible explosion risk zone controller (ERZC) conducted an inspection to identify the source of the methane. During the inspection in the area of the tailgate shields, the ERZC detected greater than 2.5% of methane. For further information refer to the [Mines Safety Alert](#).
- **(Queensland)** The use of fire-resistant anti-static (FRAS) materials in underground mining environments plays a critical role in reducing the risk of underground ignitions. Recent testing in relation to FRAS rated products has established that two FRAS rated products have failed to meet the fire resistance and/or electrical resistance standards. For further information refer to [Mines Safety Alert](#).

Incidents by principal control plan



Mechanical engineering control plan

- **(Queensland)** A worker was seriously injured at a quarry when his left arm became entangled in the rotating tail drum of a conveyor belt. Prior to the accident, the conveyor had been stopped to enable clearing of rock spillage from the tail drum area.

The injured worker was attempting to clear rock from the nip point where the return side of the belt meets the tail drum, when the conveyor was briefly energised (jogged) by another worker from the plant switchboard located some distance away. The conveyor belt had to be cut in order to free the injured worker. For further information refer to the [Incident periodical \(June\) - Minerals and Quarries](#).
- **(Queensland)** An incident occurred in Central Queensland involving an EFFER vehicle loading crane. These cranes have several hydraulic extensions that are held in the boom with pins. The pins are locked into the boom's segments with a grub screw. A loose grub screw enabled a pin to fall out, which then allowed the extension to drop out when the crane was deployed for use. The dropped extension arm broke off a hydraulic fitting. No-one was injured. For further information refer to the [Safety Alert](#).
- **(Queensland)** A carousel wear plate, weighing approximately 1 kilogram, fell from a height of 12m from an overburden drill mast, and landed on the deck of the drill, near the cab door. For further information refer to the [Mines Safety Alert](#).



- **(Queensland)** While replacing a light in a coal handling preparation plant, workers identified that the shackle on the light was badly worn. The shackle was the only support point. If the shackle had failed, the entire weight of the light would have been seen by the power cable. For further information refer to the [Mines Safety Alert](#).
- **(Queensland)** A service truck had been travelling down a ramp. At the beginning of the ramp the service truck was placed in second gear to control the speed whilst travelling down the ramp. The service truck operator went to apply the brakes to further slow the vehicle. When this happened, the brakes were ineffective. The service truck operator then steered the truck into a pile of material to stop the truck movement. For further information refer to the [Mines Safety Alert](#).
- **(Western Australia)** Inspectors have raised many defects and notices related to the poor condition of accessway grating in plants at more than 60 mines. This is notable around sumps and drains, above leach tanks and in saline environments. Gratings are often corroded, deformed, inadequately secured and/or incorrectly installed. Grating supports are frequently cracked, corroded or missing. For further information refer to the [Mines Safety Bulletin](#).
- **(Western Australia)** Mines safety inspectors have identified serious safety issues related to the performance and management of on-site structural welding. Structural welds include welds associated with lifting lugs, safety devices and safety protection systems, which are often only loaded during critical safety events. Failure of structural welds can lead to catastrophic structural collapse and expose workers to the risk of serious or fatal injury. For further information refer to the [Mines Safety Bulletin](#).
- **(United States)** There have been eight fatalities involving belt conveyors in the United States mining industry since 26 January 2017. Six involved miners working near moving conveyors, while two involved maintenance of an idle conveyor. All these fatalities could have been prevented with proper lock-out/tag-out and isolation before working. For further information refer to the [Safety Alert](#).



Electrical engineering control plan

- **(Queensland)** An electrical worker discovered a bypass in one of the safety circuits, on an underground conveyor belt starter. The bypass 'defeated' the function of field emergency stops and internal door limit switches. Early investigations indicate however, that this bypass may have been inadvertently left on during commissioning. For further information refer to the [Incident periodical \(June\) - Coal Mines](#).
- **(Western Australia)** There have been numerous incidents at mine sites involving the testing and maintenance of temporary generators, with several defects being detected. For further information refer to the [Mines Safety Bulletin](#).

Other dangerous incidents

- **(Queensland)** Two workers received serious injuries from rib spall while working on a continuous miner in a development panel heading. The incident occurred as they were installing roof support and extending ventilation tubes. An inspection of the site revealed that the machine mounted rib protection system installed on the continuous miner did not provide an effective control for this hazard. For further information refer to the [Mines Safety Alert](#).
- **(Queensland)** An engine mounted on a stand, has fallen from a truck onto a haul road, during transit. The engine (and stand) weighed approximately 6 tonne and was secured to the truck by two ratchet straps. There was no dunnage or non-slip matting present between the cradle and the truck bed. As the truck moved off from a stop sign, located on a slight ascent from the pit, the cradle and motor moved towards the rear of the truck bed, snapping the restraints. No persons were in the vicinity at the time. For further information refer to the [Incident periodical \(June\) - Coal Mines](#).
- **(Western Australia)** An excavator operator using a hydraulic shear attachment to cut the fire suppression pipe into sections also inadvertently cut a pressurised fire extinguisher in half. For further information refer to the [Safety Alert](#).
- **(New Zealand)** A loader was reversing from the face in an underground operation when diamond drill rods dropped rapidly from the last row of ground support (3.5 metres from face) and struck the face. For further information refer to the [Safety Alert](#).
- **(New Zealand)** An operator was exiting his excavator when he noticed the boom moving. He had not lowered the boom and it was not in safety mode, so the boom was able to move freely. He quickly re-entered the excavator and lowered the boom into safety mode. For further information refer to the [Safety Alert](#).
- **(New Zealand)** An operator of an excavator with a quick hitch and bucket attached, lifted the boom of the excavator and propelled the bucket five metres towards a nearby worker. Fortunately, the bucket missed the worker, and no-one was injured. The locking pin was not inserted into the quick hitch. For further information refer to the [Safety Alert](#).



Other serious injuries

- **(Queensland)** Workers were tasked with installing 95mm, three core and earth steel wired armoured power cables down service. The set-up for this task involved installing a pulley off a resin bolt on the backs of the drive. The cable was then to be wound off the drum, through the pulley and down the service holes.

At the completion of the installation of the third cable, the cable was cut and the job paused while two of the workers went to straighten the cables on the level below. During this time the pulley and the cable detached from the backs of the drive falling to the floor. One of the workers was struck by the cable and suffered muscular-skeletal pain to his neck. For further information refer to the [Incident periodical \(June\) - Minerals and Quarries](#).

- **(Queensland)** A worker was replacing a ground engaging tool (GET) on an excavator bucket, when the tooth being fitted became jammed in wrong position, not enabling a secure fitting over the retaining lock. The worker chose to use a hard face hammer to try and remove and reposition the GET off the adapter. A piece of hardened shard chipped off, projecting into the worker's forearm and causing a deep laceration. The worker was transported to a hospital for further treatment. For further information refer to the [Incident periodical \(June\) - Coal Mines](#).

Notifiable incidents relating to hazards

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.

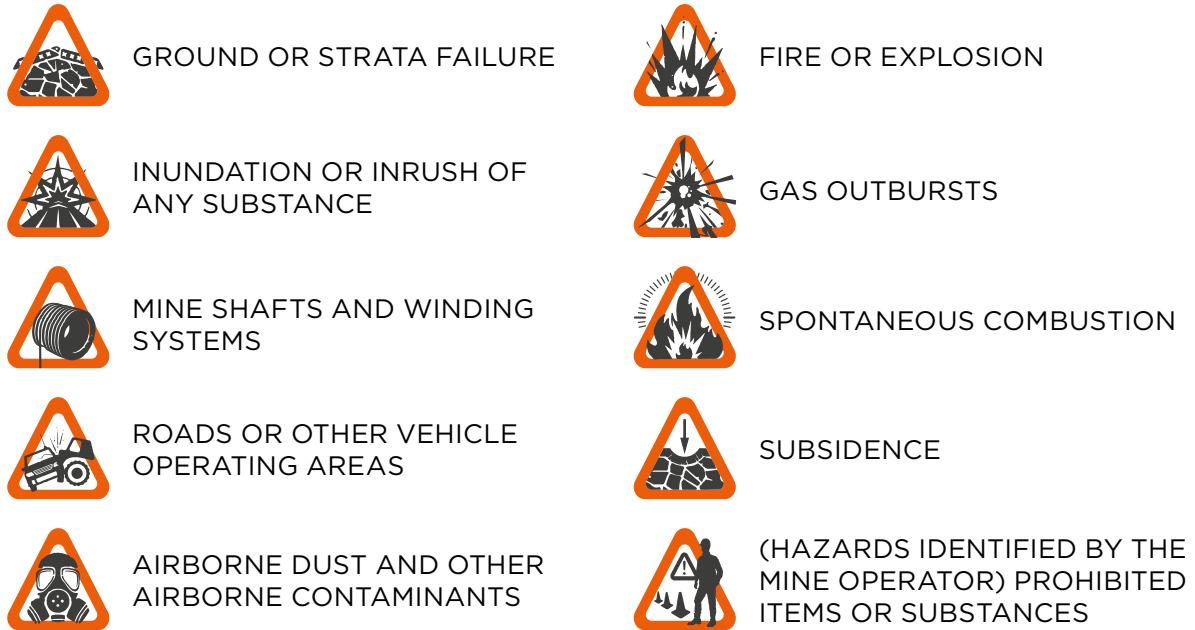
Overall there were 592 incident notifications received in the current quarter. Of these, 33% (198) related to principal hazards, 29% (173) related to principal control plans and the remainder related to other incidents.



TABLE 1. INCIDENT NOTIFICATIONS CLASSIFIED BY PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN JULY 2019 TO SEPT 2020

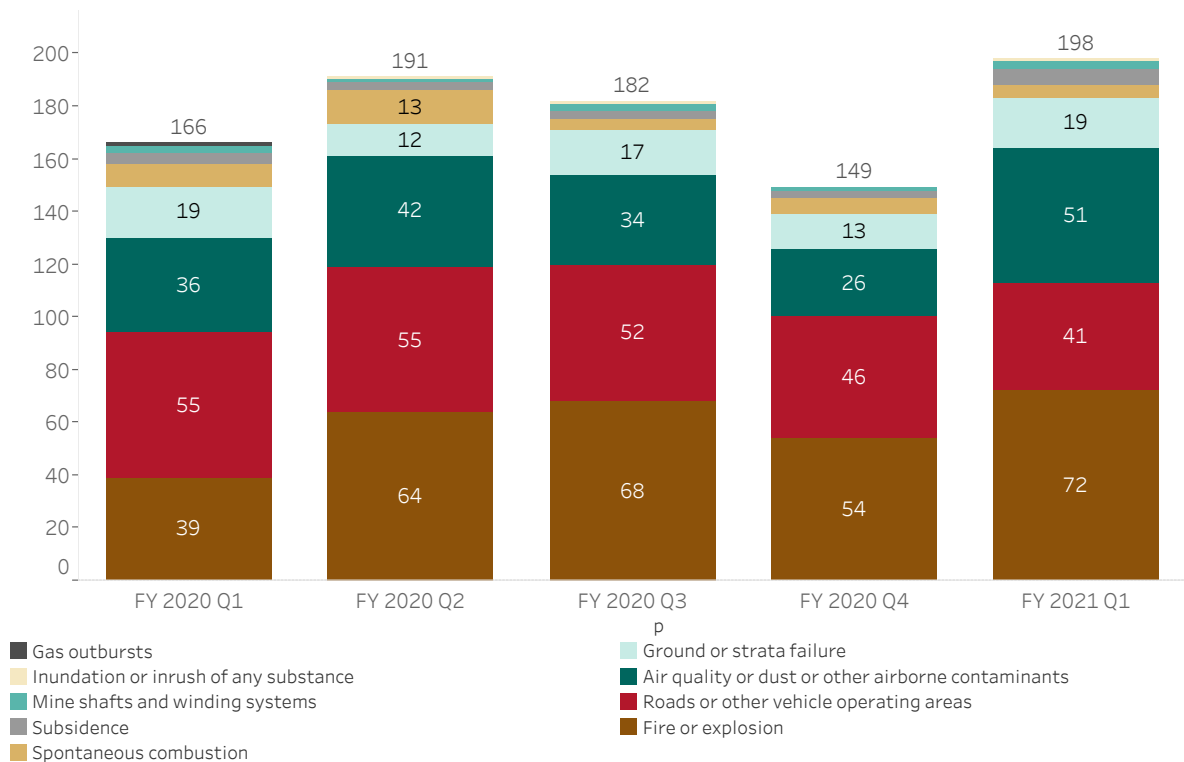
INCIDENT PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN CLASSIFICATION		FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	LAST 12 MONTHS
Principal hazard	Air quality or dust or other airborne contaminants	36	42	34	26	51	153
	Fire or explosion	39	64	68	54	72	258
	Gas outbursts	1	-	-	-	-	0
	Ground or strata failure	19	12	17	13	19	61
	Inundation or inrush of any substance	-	1	1	-	1	3
	Mine shafts and winding systems	3	1	3	1	3	8
	Roads or other vehicle operating areas	55	55	52	46	41	194
	Spontaneous combustion	9	13	4	6	5	28
	Subsidence	4	3	3	3	6	15
	Total	166	191	182	149	198	720
Principal control plan	Electrical Engineering Control Plan	41	26	24	23	27	100
	Electrical and/or Mechanical Engineering Control Plan	64	72	51	51	56	230
	Explosives Control Plan	31	18	13	24	23	78
	Mechanical Engineering Control Plan	53	55	78	55	62	250
	Ventilation Control Plan	7	8	3	2	5	18
Total	196	179	169	155	173	676	
Other	Other incidents not PH or PCP	199	184	175	176	221	756
GRAND TOTAL		561	554	526	480	592	2,152

Principal mining hazards



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

FIGURE 1. INCIDENT NOTIFICATIONS RECEIVED BY PRINCIPAL HAZARD JULY 2019 TO SEPTEMBER 2020



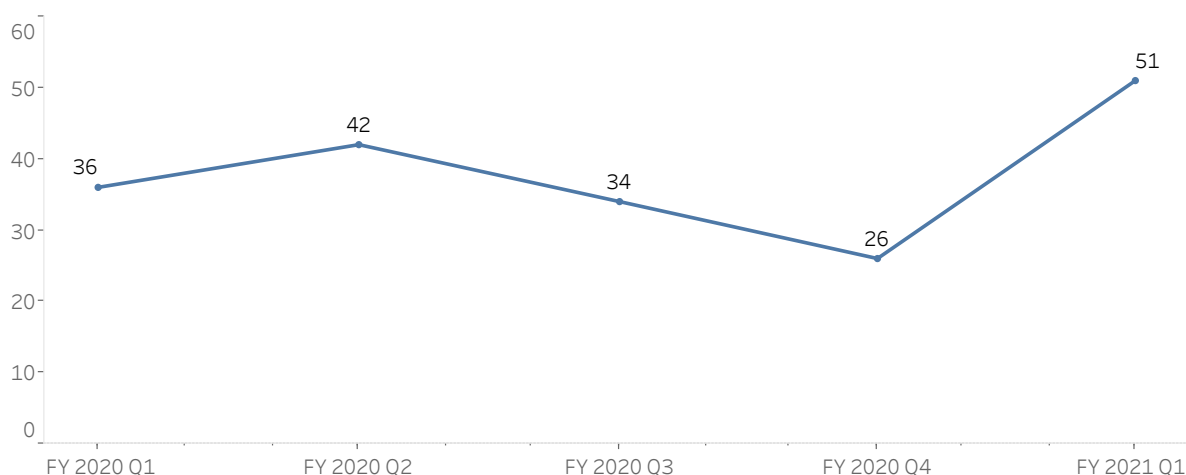


Air quality, dust or other airborne contaminants



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 2. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD AIR QUALITY, DUST OR OTHER AIRBORNE CONTAMINANTS JULY 2019 TO SEPTEMBER 2020



HIGH POTENTIAL INCIDENT - FLOOR BREAK RELEASES GAS

Two methane exceedances were detected on a longwall drive sensor, with peak readings of 2.88% and 3.71% (on the real time monitoring system). Investigation of the first reading found that the tailgate drive had tripped due to floor gas being released. During an adjustment to the tailgate brattice wing there were a series of methane spikes at the drive, which reached a maximum value of 2.88%. The second instance occurred when the roof supports were being moved, after the tailgate had been cut out. Floor gas was released, due to a floor break underneath the tailgate drive.

Methane sensors located on the tailgate drive recorded an increase in methane on both occasions, with a maximum of 3.71%. However, several other sensors did not register any increase in methane levels, during these events. A brattice wing was installed to help ventilate the tailgate, and the seam was drilled for added gas drainage.

Recommendations include:

- Ensure ventilation design can accommodate for changes in gas levels.
- Ensure procedures are in place to enable degassing places where methane has accumulated.

- Ensure that methane monitoring plant is provided at the mine, that provides for the capture, storage, retrieval and dissemination of information relating to methane concentrations detected.
- Ensure detection heads of gas content monitoring plant are positioned to maximise the likelihood of detecting the gas being monitored and producing accurate readings.

HIGH POTENTIAL INCIDENT - POOR CLEANING PRACTICE EXPOSES WORKER TO SILICA DUST

The quarry manager of a sandstone quarry notified the regulator of a respirable silica dust exceedance in one of two monitoring samples taken on workers, at different locations around the site. One of the workers was tested on two separate days, in different locations doing the same activity.

The test in the first area returned a value of 0.078mg/m³, while the test in the second area returned a value of 0.041mg/m³. It was noted that in the second area, the worker employed the use of a waterfall dust extractor as a control, whilst in the first area, the worker did not use waterfall dust extractor as a control, but rather, used a banister brush to clean debris during work.

The practice of dry brushing the work area, combined with a build-up of dust fines, contributed to the exceedance.

Recommendations include:

- Workplaces should review the effectiveness of controls to ensure they continue to provide a reduction in risk.
- In dusty work environments, exposure monitoring of workers should be used to help identify the need for added controls.
- Exposed workers must be notified of any exceedances.



>>> A new respirable crystalline silica workplace exposure standard of 0.05mg/m³ has taken effect in NSW.

>>> A new coal dust exposure standard of 1.5mg/m³ will be introduced from 1 February 2021.

>>> An exposure standard of 0.1mg/m³ for diesel particulate matter will be introduced from 1 February 2021.

CHANGES TO EXPOSURE STANDARDS

Visit our website for information: resourcesregulator.nsw.gov.au

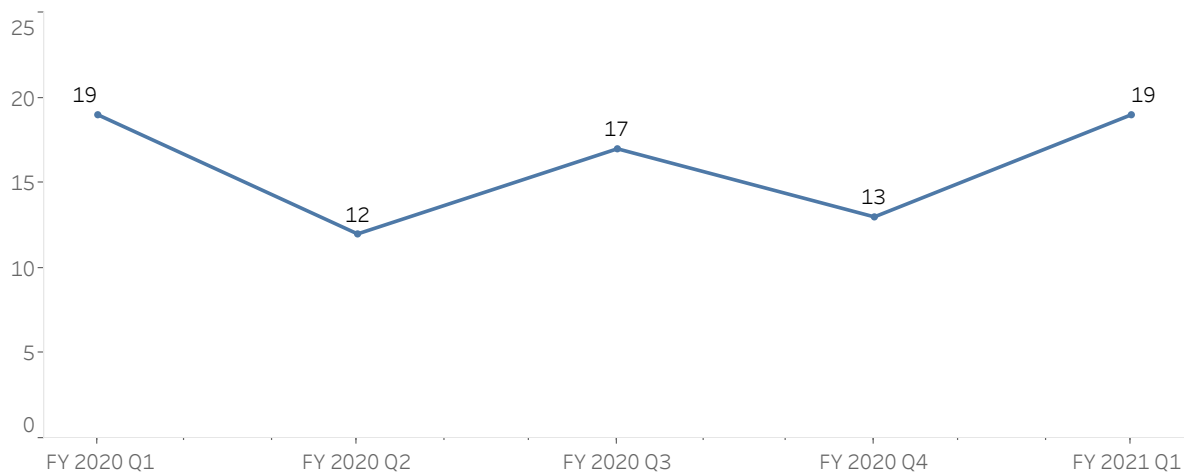


Ground or strata failure



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 3. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD GROUND OR STRATA FAILURE JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT - GOOD PLANNING LEADS TO GOOD CONTROLS

A coal burst occurred at a longwall mining operation. The longwall was operating in full remote mode, due to TARP requirements with the presence of a dyke on the longwall face, increasing the risk of coal burst. The coal burst was identified when an e-stop was activated on a shield causing the shearer to stop. The crew reviewed video recorded at the time of the incident and saw the coal being ejected.

Considerations:

- This incident highlights the importance of implementing controls, such as remote mining operations, when the potential for coal burst has been identified.

The careful evaluation of factors known to be associated with coal bursts was a key aspect of this operation activating controls to eliminate the risk to workers from an identified principal hazard.



DANGEROUS INCIDENT - VIBRATION MAY HAVE CAUSED VOID TO OPEN

During grade control drilling a small void (600mm x 800mm) was observed to open in the cap material that runs along a stope. The drilling was being conducted about four metres from the void and it's believed the vibrations from the drilling has caused the void to open. Nobody was in the vicinity of the void at the time and the work area was monitored from when the void was first noticed to have slowly started opening.

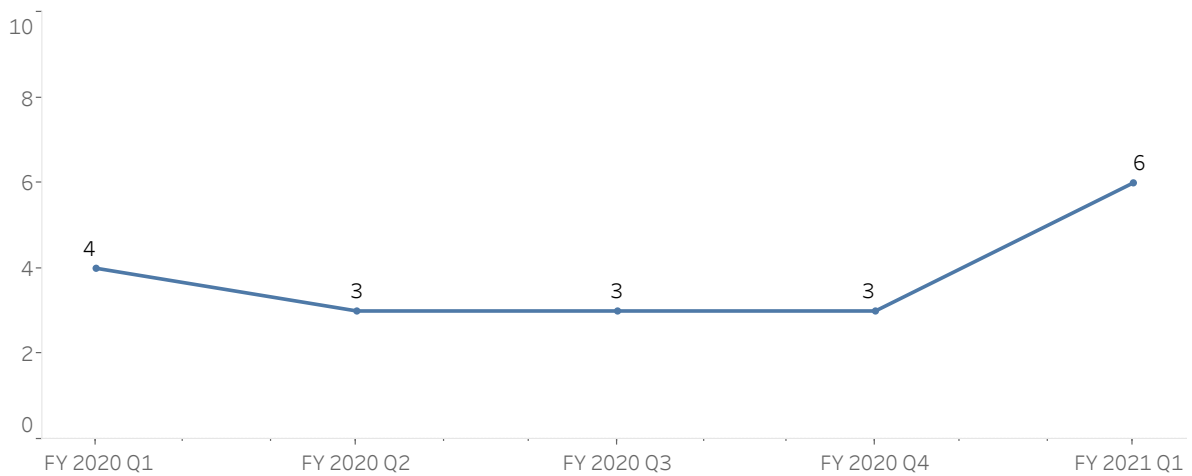
The void was been taped off and the drill rig moved. The scene remained preserved until inspectors arrived and an investigation commenced.



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 4. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD SUBSIDENCE JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT - 'FLOOR SLUMPING' OCCURS IN PREVIOUSLY BACKFILLED STOPE

A jumbo operator (and nipper) conducting rehabilitation on top of a rock filled slope, at an underground metal mine, were working on a stope that had previously been filled with rock, when they noticed the floor starting to slump. While they were out changing 'bits and steels', the operator noticed the left-hand boom creeping as the floor slumped about three metres. Both workers immediately left the area.

A preliminary investigation suggested water from the Jumbo seeped through the floor and moved fine material into a larger void, resulting in the slump. The area was barricaded off and no persons were injured.

Considerations:

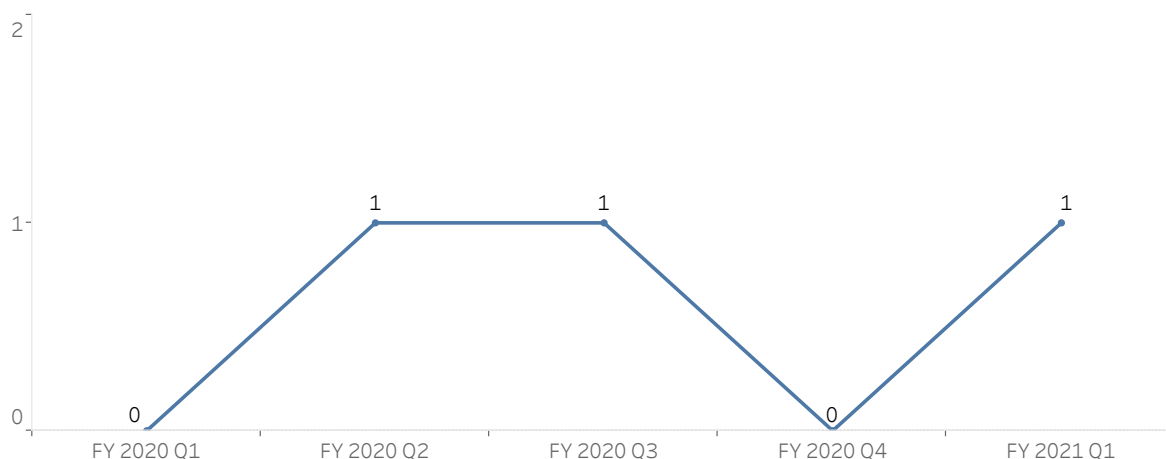
- Procedures for backfilling stopes should consider and include adequate controls and verification, to ensure that the ground is consolidated and that no voids remain, which could lead to slumping.



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 5. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD INUNDATION OR INRUSH JULY 2019 TO SEPTEMBER 2020



HIGH POTENTIAL INCIDENT - PLANNING AND QUICK ACTION AVERTS DAMAGE

After heavy rain in the Shoalhaven Area, the Shoalhaven River experienced flooding which in turn led to an inundation of floodwater and breakage to a wall at a nearby quarry.

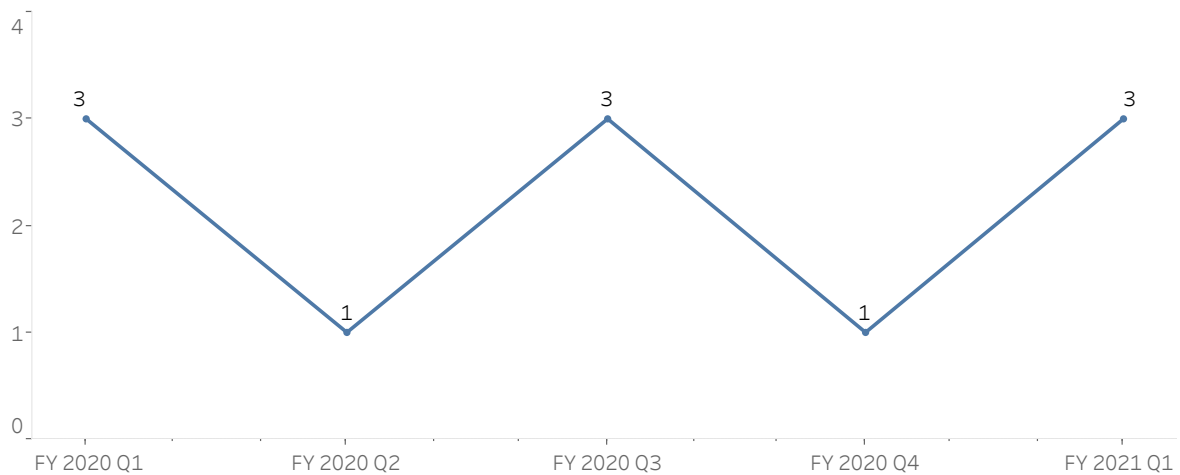
Timely preparations at the quarry enabled all machinery and material to be moved to higher ground before the inundation event occurred. Due to early planning, damage to equipment or the environment was avoided.



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 6. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD MINE SHAFTS AND WINDING SYSTEMS JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT - DOLLY CAR FAILS TO STOP

As a dolly car operator was going down to pit bottom level the joystick was released to stop the dolly car, but the dolly car continued to move. The operator then released the dead man foot switch. The winder was in creep speed at the time.

The dolly car continued to move down hill (noting it takes a while for this system to operate) so the emergency stop was used to bring the dolly car to a standstill.

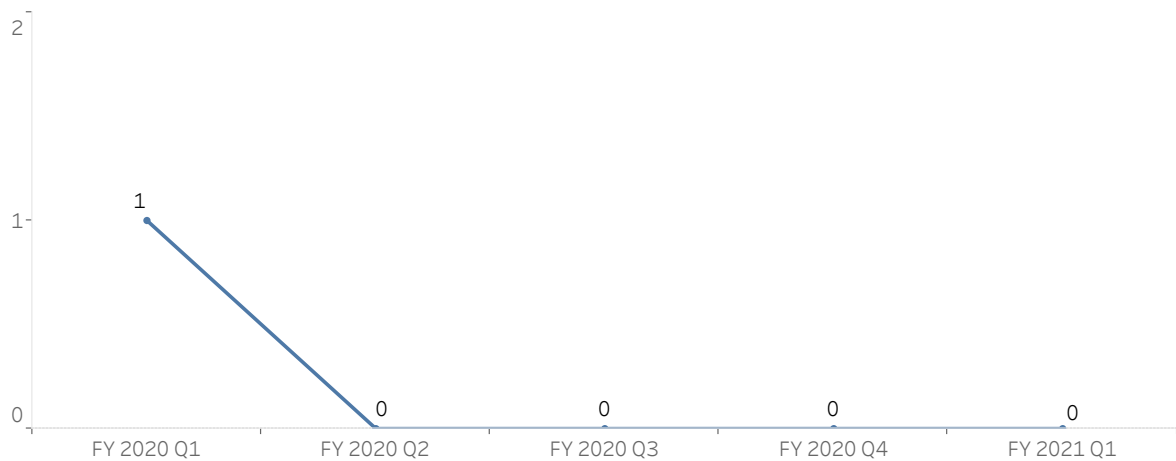




Gas outbursts

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.

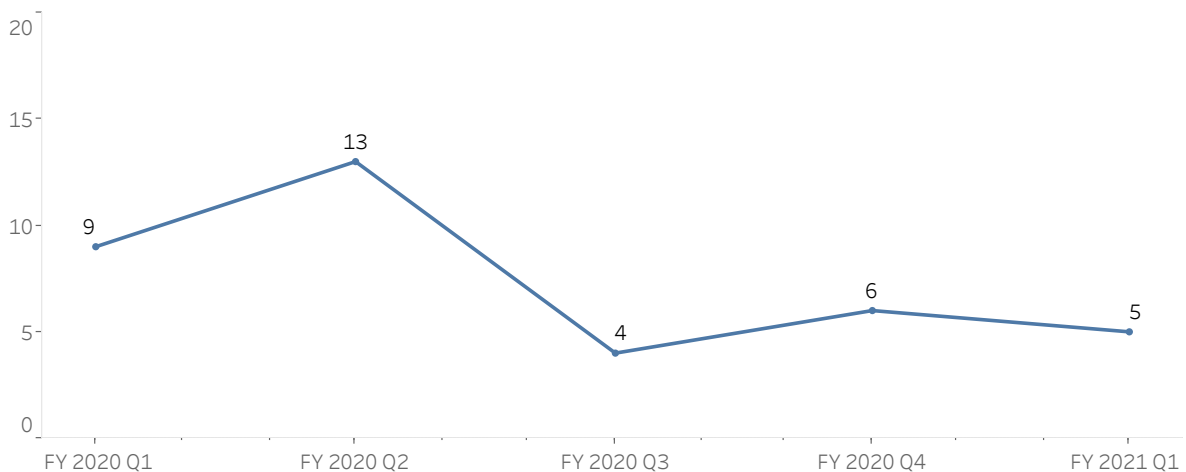
FIGURE 7. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD GAS OUTBURSTS JULY 2019 TO SEPTEMBER 2020



Spontaneous combustion

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 8. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD SPONTANEOUS COMBUSTION JULY 2019 TO SEPTEMBER 2020



HIGH POTENTIAL INCIDENT - SPONTANEOUS COMBUSTION IN TRAIN LOAD OUT AREA

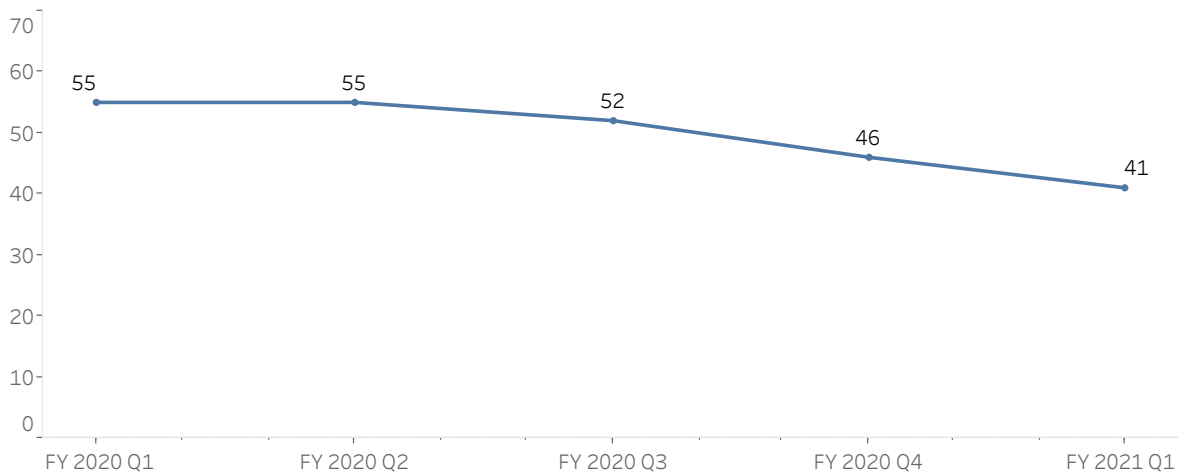
Upon inspection of a train load out area, the coal handing plant supervisor observed a small isolated area of spontaneous combustion. The material was spread out and suppressed with water as per the Spontaneous Combustion Management Plan.



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 9. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD ROADS OR OTHER VEHICLE OPERATING AREAS JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT - SPEED MAY HAVE BEEN A FACTOR IN ROLL-OVER

A loaded articulated haul truck rolled over while going around a corner. The truck had been parked up in the workshop while the operator was on crib break. Following the crib break, the driver and a passenger were returning to work in the truck, when the trailer body rolled over while going around a corner. The cabin remained upright, and nobody was injured. Speed is being considered as a contributing factor. An investigation into the incident is ongoing.

The stability of articulated vehicles is a known risk that needs to be managed by mines. Consideration should be given to factors such as (but not limited to):

- speed of operation
- operating grades
- uneven surfaces (holes, rocks, foreign material)
- tipping of loads
- hang-up of loads
- movement of loads.

The risks associated with the rollover of mobile plant was included in our compliance priority program in 2018. A [report](#) into the results and observations of that program can be found on our website.

DANGEROUS INCIDENT - SEATBELT USE REDUCES FURTHER INJURY

A rigid haul truck rolled over the side of a haul road, coming to rest on the edge of a steep drop. The operator was wearing a seatbelt and suffered a minor head injury.

Initial enquiries suggest that sunlight interfered with the driver's line of sight, causing him to drive into the bunding that was not adequate to hold up the truck. The truck drove over a large rock in the bund wall and tipped over.

Recommendations include:

- Mine operators should ensure that bunds are designed, constructed and maintained to a standard that is suitable to protect workers from harm.
- Principal hazard management plans for roads or other vehicle operating areas should consider factors that may affect operator visibility or affect lines of sight. Sunlight, fog, or dust or other obstructions may affect a driver's ability to safely control a vehicle.
- This incident also highlights the importance of wearing a seatbelt while operating mobile plant.



DANGEROUS INCIDENT – DRILL RIG BRINGS DOWN POWERLINE

An exploration drill rig contacted with energized 22kV overhead power lines while travelling across a paddock on an exploration site. One of the three power lines broke and dropped to the ground. The operator dismantled the drill rig without suffering any injuries or electric shock.

Work activities in remote areas can pose additional hazards and constraints on available risk control measures. However, this does not justify failure to control the risks.

For further information refer to the [Safety Alert](#) relating to this incident.

Recommendations include:

- Risk assessments should consider the risks associated with all activities that may occur near overhead power lines, irrespective of the frequency or complexity of the activity.
- Risk assessments should identify all controls to prevent equipment encroaching on safe approach distances for high voltage overhead power lines, including:
 - alternate travel routes or work sites
 - limits on maximum height for any equipment that may travel, or be transported below, or work near overhead power lines
 - warning signage or barriers (temporary or permanent) for overhead power lines (include safe height limits).
- The use of procedures, check lists and permits should also be supported by planned tasks to verify their implementation and effectiveness in managing the risk.
- Emergency procedures should be established and include contact details of the electricity supply controller.
- Operators should also familiarise themselves with the guidance provided in the Work near overhead power lines NSW code of practice.

Related reading can also be found at [SB15-05 Plant contacting overhead powerlines and structures](#).



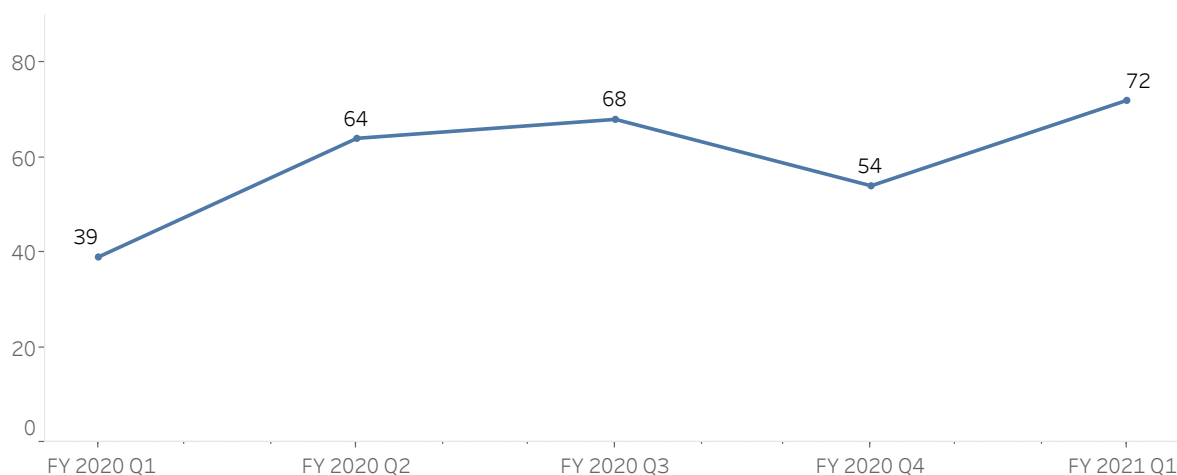


Fire or explosion



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 10. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD FIRE OR EXPLOSION JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT - POOR HOUSEKEEPING CONTRIBUTES TO FUEL SOURCE

Workers in an underground coal mine detected a burning smell and noticed that the gearbox output shaft of a conveyor belt felt warm. They saw small embers in a build-up of material behind the coupling cover. An initial investigation indicates that the overloading of the gearbox may have occurred, resulting in oil overheating.

Recommendations include:

- Mines should ensure that temperature monitoring is installed in locations where it is most likely to detect and alert an increase in temperature from component wear/failure or low oil levels.
- Conveyors should not be operated outside of original equipment manufacturers operating parameters such as load, temperature and oil specifications.
- Areas where material can accumulate, such as under guards, should include methods to allow for inspection and cleaning. These areas should be included in routine maintenance inspections.

SAFETY ALERT – POSSIBLE TAMPERING WITH EXPLOSION PROTECTED DIESEL ENGINE SAFETY SYSTEMS

During the quarter we published a [Safety Alert \(SA20-07\)](#) related to concerns about possible tampering with explosion protected diesel engine safety systems.

A tradesperson, who was investigating an issue with an explosion protected diesel engine system (ExDES), found that both scrubber floats were damaged due to heat exposure. This indicated the engine had been operating in a non-explosion protected state.

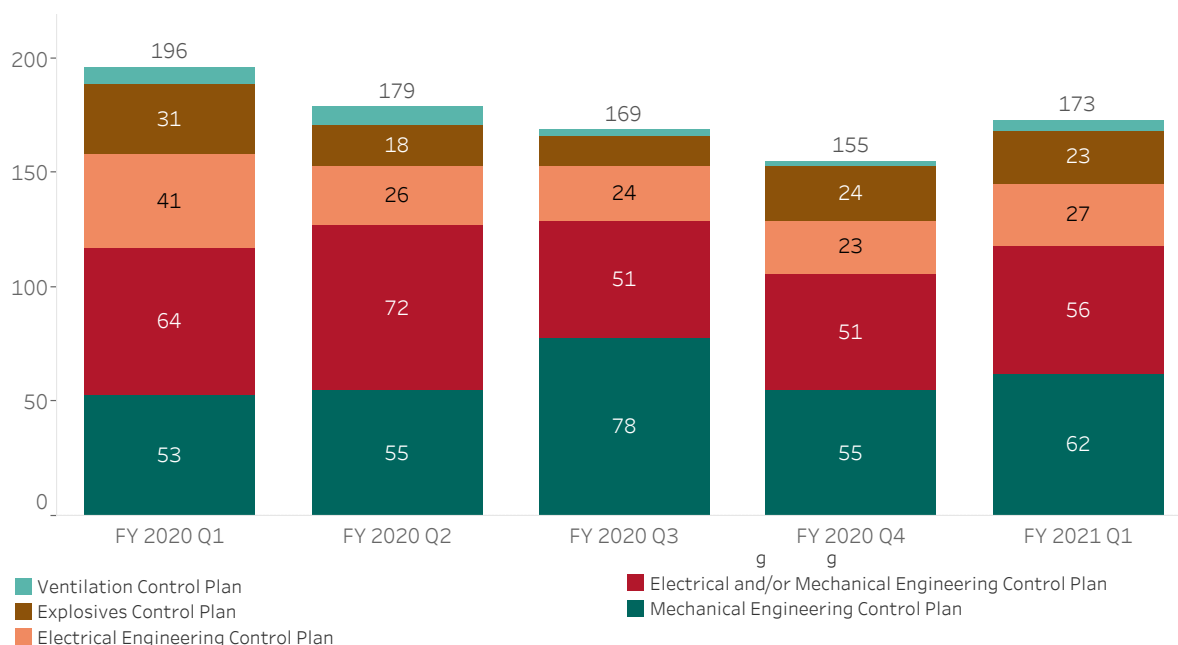
Principal control plans

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

FIGURE 11. INCIDENT NOTIFICATIONS RECEIVED BY PRINCIPAL CONTROL PLAN JULY 2019 TO SEPTEMBER 2020



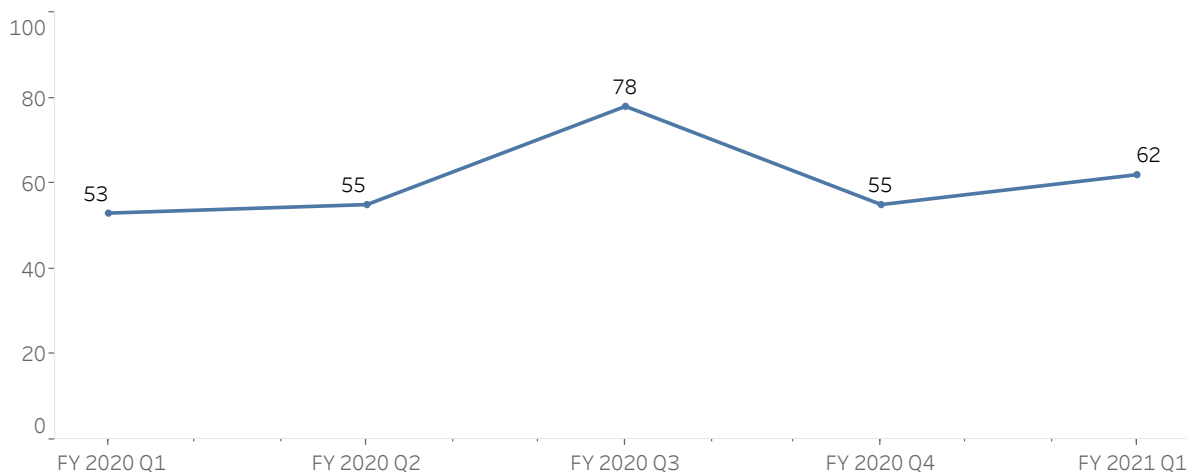


Mechanical engineering control plan



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 12. INCIDENT NOTIFICATIONS RELATED TO THE MECHANICAL ENGINEERING CONTROL PLAN JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT - FAILURE TO ISOLATE LEADS TO INJURY

A worker was removing an accumulator from a raise boring rig on the surface laydown area. During this activity, he suffered a fluid injection injury to his left-hand ring finger. The worker was admitted to hospital and underwent surgery.

Recommendations include:

- Mine operators are reminded that effective isolation and energy dissipation are critical risk controls when working on high pressure fluid systems.
- Methods for dissipation of energy must be established and communicated for work on each part of a high-pressure system.

The following safety alerts, bulletins and guidance should be referenced for control recommendations and reducing fluid injection risks:

- [SB13-01 Fluid injections result in surgery](#)
- [SB12-03 Fluid power isolation failures](#)
- [SA09-04 Hydraulic injection near miss](#)
- [SA06-16 Fatal high-pressure hydraulic injection](#)
- [MDG-41 Fluid power systems](#)
- [MDG-40 Energy isolation fatal incidents](#)

DANGEROUS INCIDENT - WORKER SUFFERS CONCUSSION

A worker was hit on the back of the head by the access ladder of a grader that was being repaired. The force cracked his hard hat and knocked him to the ground. He suffered a concussion and whiplash. The ladder was stuck in the raised position due to insufficient oil in the control box. While the worker was waiting to top up the oil, the access ladder cycled down in an anticlockwise direction hitting him on the back of the head. The grader was not running at the time of the incident.

Recommendations include:

- The hazards associated with moving parts of plant and machinery must be identified.
- Controls such as safe standing zones should be established in consideration of potential system failures.
- No go zones must be identified and communicated to workers to ensure they remain out of the line of fire.

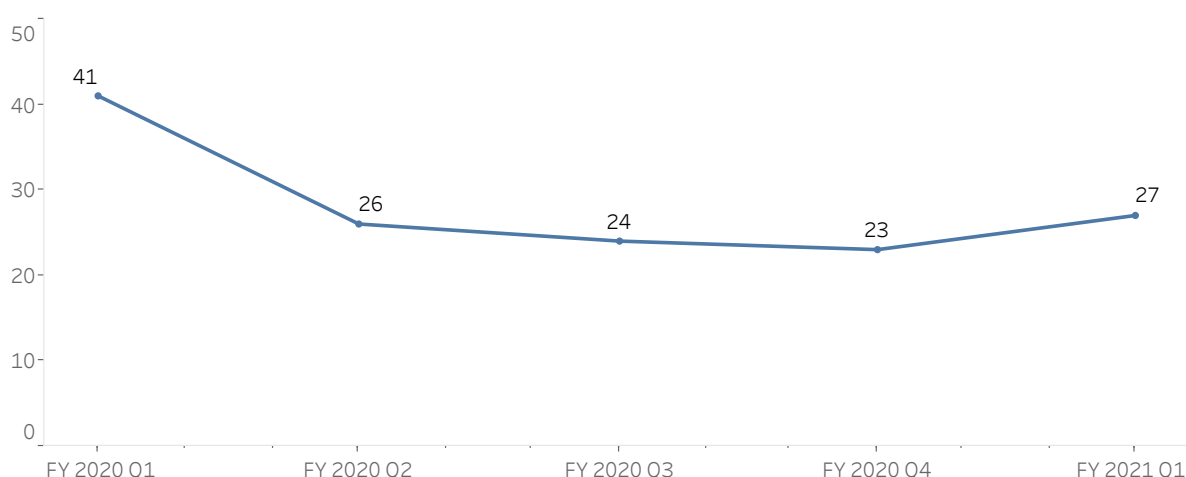
The incident is under investigation.



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 13. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL ENGINEERING CONTROL PLAN JULY 2019 TO SEPTEMBER 2020



DANGEROUS INCIDENT – SHOCK IN SHOWER

A worker showering in the amenities building, received an electric shock when operating the water tap. Initial investigation shows that the inadvertent repowering of a redundant hot water tank and the ineffective earth bonding of the plumbing and drainage pipework exposed the worker to a potential difference between the tap and the shower floor.

Recommendations include:

- Mine operators must ensure installations meet the requirements of *AS/NZS3000 Wiring rules* with attention to the effectiveness of earthing and bonding of pipework and conductive materials in wet areas.
- Low impedance earth paths and the use of fast acting sensitive earth fault protection are paramount in the early detection and interruption of hazardous electric faults.

Refer to the investigation report into a previous [electrical fatality](#) for further information.

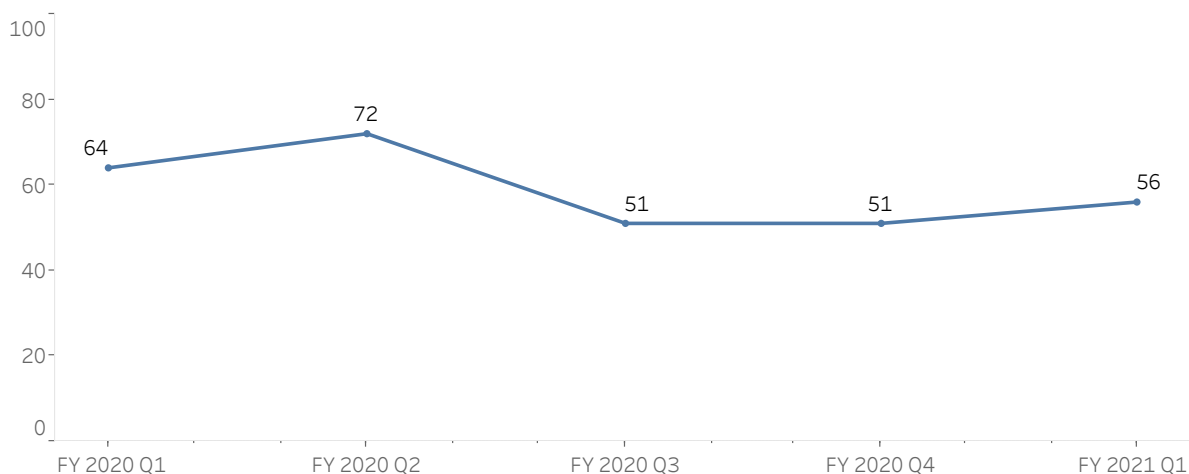


Electrical and Mechanical control plans

Notified incidents may relate to both electrical and mechanical control plans.



FIGURE 14. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL AND/OR MECHANICAL CONTROL PLAN JULY 2019 TO SEPTEMBER 2020



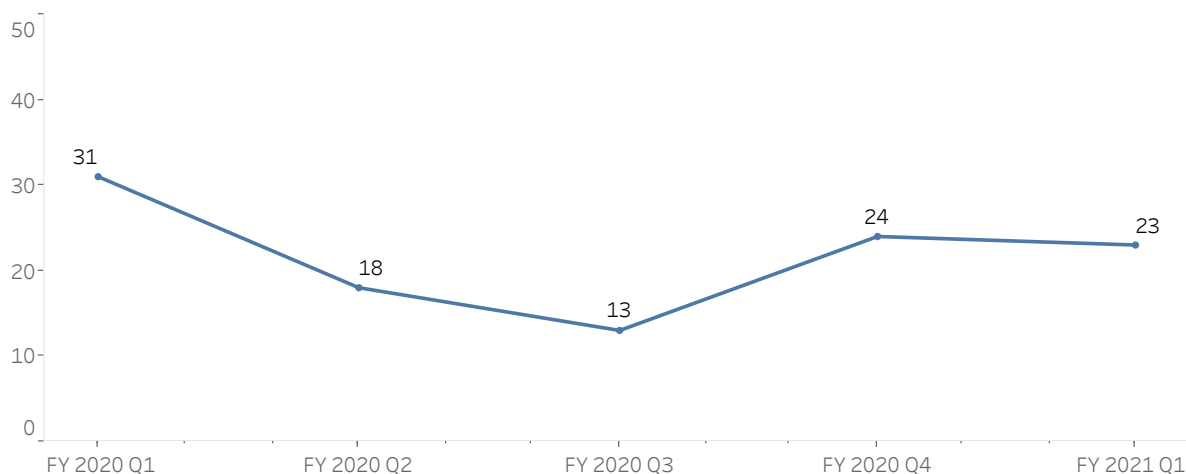


Explosives control plan



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 15. INCIDENT NOTIFICATIONS RELATED TO THE EXPLOSIVES CONTROL PLAN JULY 2019 TO SEPTEMBER 2020



LOSS OR THEFT OF EXPLOSIVES - STOLEN EXPLOSIVES LEAD TO ARREST

Police called personnel at a gold mine to inform them that they would be attending site over the reported theft of a plug of explosive and a detonator. Shortly after arriving and speaking to a person, Police arrested him and removed him from site.

Recommendations include:

- Ensuring that the explosives control plan sets out control measures for risks to health and safety associated with explosives considers the potential for theft of misuse.
- Ensuring that the explosives control plan sets out procedures for the accounting of explosives at the mine site.
- Ensuring that the explosives control plan sets out arrangements for keeping a register of persons who are licensed (to use, handle, transport and store) under the *Explosives Act 2003*.



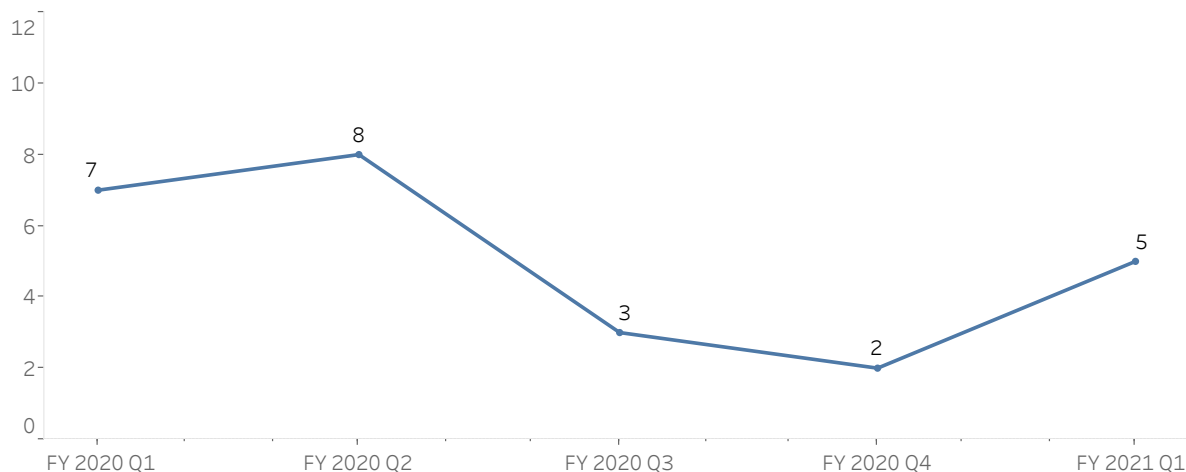


Ventilation control plan



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 16. INCIDENT NOTIFICATIONS RELATED TO VENTILATION CONTROL PLANS JULY 2019 TO SEPTEMBER 2020



HIGH POTENTIAL INCIDENT - VENTILATION FAN OUTAGE NOT DETECTED

A mine operator reported that a surface primary ventilation fan was not operational early into dayshift. Repairs were undertaken and the fan resumed operation later that same day. An investigation revealed that the fan had failed a day earlier, resulting in an elapse of approximately 36 hours before the fan was repaired and operational.

Underground operations at an adjoining mine (fed by the fan) were only made aware of the fan’s outage the next day, resulting in operations for 33 hours without ventilation flow from the fan. The mine’s primary ventilation fan was unaffected and provided limited primary flow in the mine.

Recommendations include:

- Ensure that each fan installed on the surface, and each booster fan installed below ground, is fitted with one or more devices that continuously monitor the working condition of the fan and trigger a visible alarm if there is a significant departure from the fan’s normal operating parameters.
- Ensure a Trigger Action Response Plan (TARP) is in place so that immediate action is taken to supply adequate ventilated air to impacted parts of the mine as soon as possible.



In the spotlight Silica dust management training taken online

Following the recent change to workplace exposure standards for airborne contaminants, the Institute of Quarrying Australia (IQA) identified a need for awareness training. To ensure their members understood the changes and how to comply, the IQA developed and promoted online workshops.

The workshops have been specifically tailored for the quarrying sector, with participants limited so that members can ask questions and engage in discussion. They are being delivered on a state-by-state basis across Australia, to ensure relevant state legislation is covered. The IQA has scheduled more of these workshops for NSW later this year and into 2021. The feedback has been very positive so far.

The presentation has been developed to raise awareness, dispel myths and better manage the risks associated with respirable crystalline silica. It covers the following key areas:

- workplace exposure standards
- legislation (including requirements in each state)
- risk management
- exposure monitoring, monitoring program and results
- health monitoring
- dust controls
- respiratory protection
- training
- documentation
- principal hazard management plans.

Due to the current COVID restrictions, delivery was changed to virtual workshops.

The Regulator was invited to present to participants on the new respirable crystalline silica legislative requirements in NSW and to discuss the resources available to assist operators achieve compliance.



In the spotlight Adaptive emergency planning

Hanson's Sancrox Quarry has recently held their annual emergency planning exercise, using a COVID-19 case as the initiating event.

Traditionally most emergency exercises involve explosion, fire or collapse events. This is the first time such a test of a site's emergency response capacity has been witnessed by the regulator. It is even more pleasing to see this forward-thinking approach come out of the quarry sector.

Sancrox challenged their response capacity when dealing with a biological hazard like COVID. Similar COVID -19 emergency drills were carried out across Hanson NSW sites as part of Hanson safety week.

All management, supervisors and staff were involved in the drill, with no-one pre-warned of the scenario. No external services were involved.

Scenario

The following scenario was used during the exercise:

A contract auto electrician that had been on site two days ago, contacted the site manager to say he was feeling sick yesterday. He further reported being tested and was found to be COVID positive.

It emerged that while there, the contractor logged in and out of the site using QR in. The contractor said that he had previously been to the site and on this last occasion, the QR record confirms he was there for about one hour.

He recalls that he visited the sign in area, used the site amenities once and spent most of his time working on one of the trucks on site in the yard. The truck he was working on has been used extensively since, including today. A site supervisor met and escorted the contractor around site, and they were in contact for around 20 minutes while he was here on site. Fortunately, both the contractor and the supervisor were wearing a face masks and had both used sanitiser while moving around site.

The facilitator quizzed staff and guided them through determining;

- Who did the infected contractor spend time with?
- What contact points might he have had (office, amenities, truck, paperwork, isolation locks and tags etc.)?
- Did he encounter other employees, visitors, delivery drivers?
- After being repaired, would the vehicle have been cleaned before its next use?
- How to use site's contract tracing checklist
- What are the site's process and protocols if there is a positive case detected?



In the spotlight Adaptive emergency planning continued

- Awareness of how to use the COVID-safe mobile app
- Awareness of the safe work method - “Good Hygiene Practices in shared work areas”
- Who needs to be alerted and contacted within the company (Hansen) and others (contractors and visitors)?

Outcome

The exercise enabled the Sancrox team to increase their awareness, identify a checklist of actions for use in a similar emergency and to develop improved controls.

Controls to reduce exposure included:

- supply and proper use of face masks
- hygiene-cleaning of offices, touch points and vehicles
- social distancing.



Sector profiles



Coal mines

Open cut, underground and coal preparation plants

Large mines

METALLIFEROUS AND QUARRIES

Quarries that produce >900,000 tonnes pa and large open cut 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, open cut 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

Incident notifications

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

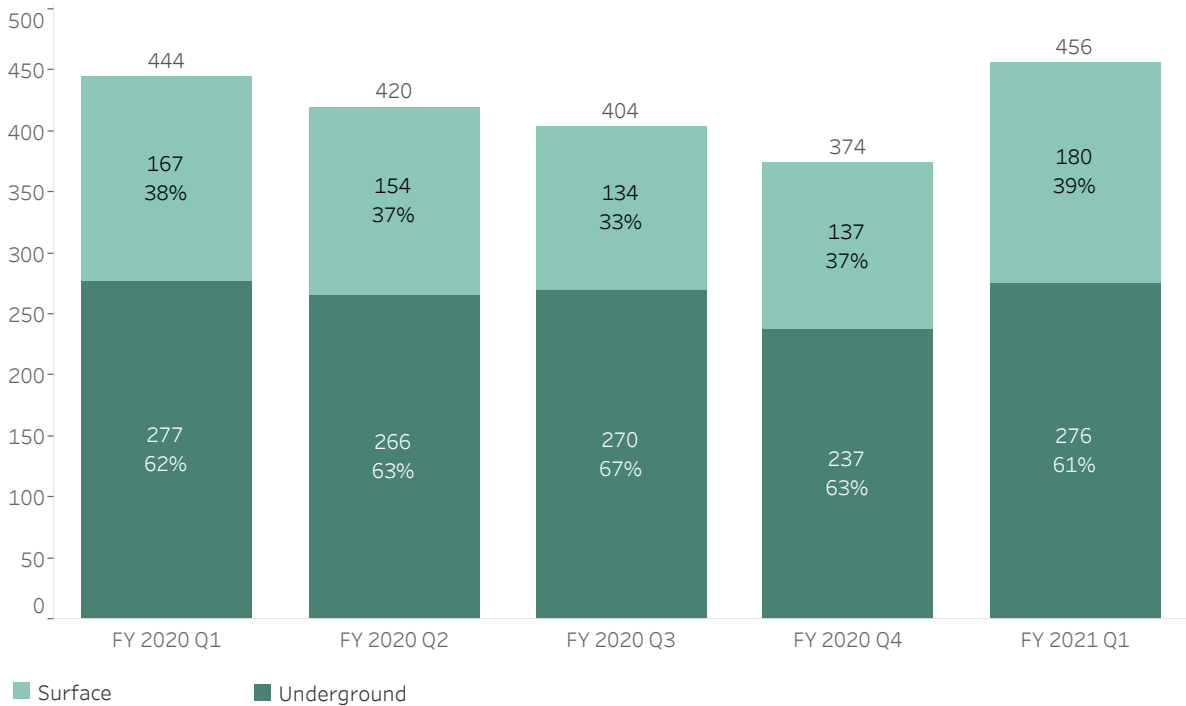
TABLE 2. COAL SECTOR INCIDENT NOTIFICATION RECEIVED RATES JULY 2019 TO SEPTEMBER 2020

MEASURE	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	AVERAGE
Incidents	444	420	404	374	456	420
Active mines	122	128	127	122	118	123
Incident rate per active mine	3.64	3.28	3.18	3.07	3.86	3.41
Mines that notified incidents	60	55	61	49	57	56
% of mines notifying an incident	49%	43%	48%	40%	48%	46%
Incident rate per notifying mine	7.40	7.64	6.62	7.63	8.00	7.46

The following graph below shows the proportion of safety incident notifications received from surface and underground coal operations. This quarter an increased number of incidents were notified across both underground and surface coal operations.

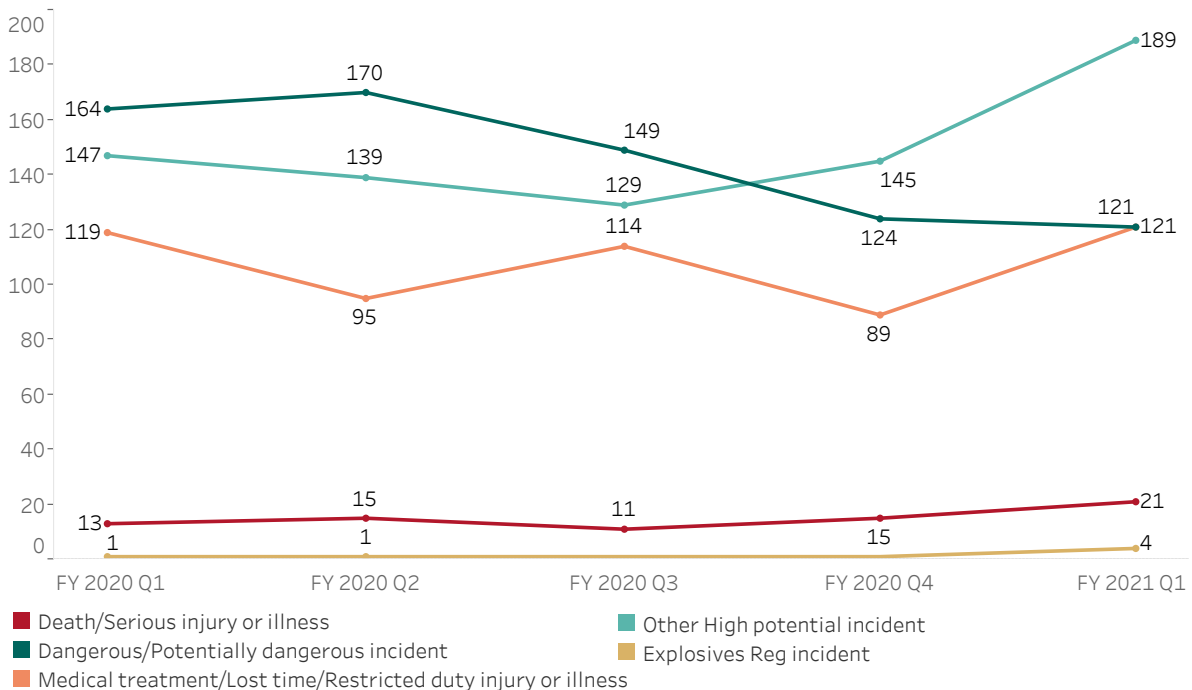


FIGURE 17. COAL SECTOR INCIDENT NOTIFICATIONS BY OPERATION TYPE JULY 2019 TO SEPTEMBER 2020



The graph below presents a breakdown of safety incidents notified to the Regulator by the coal sector by the requirement to report. This quarter saw an increasing number of serious injury or illness, medical treatment/lost time/restricted duty injury or illness and other high potential incidents notified by the sector.

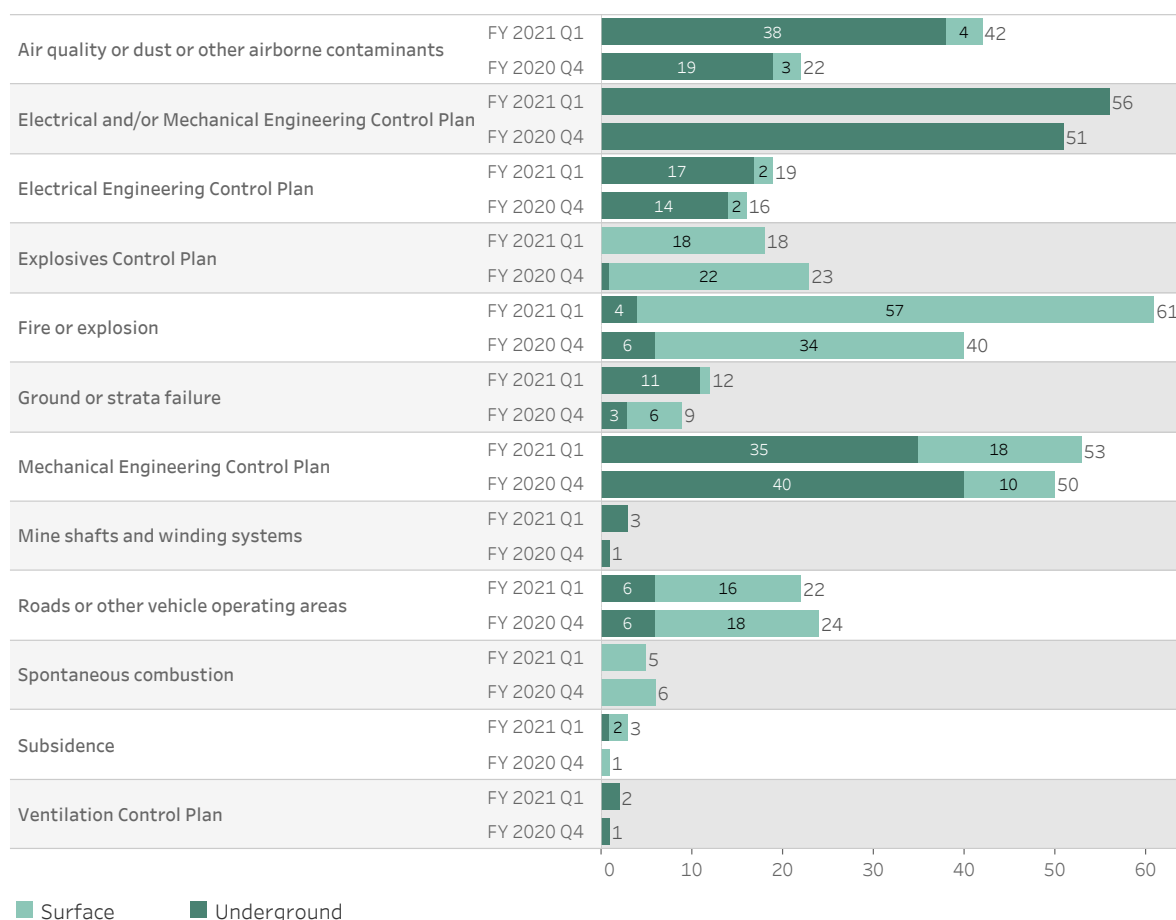
FIGURE 18. COAL SECTOR INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT JULY 2019 TO SEPTEMBER 2020



Incident notifications by principal hazard

The figure below shows the number of incident notifications received from the coal sector during the past two quarters, as classified against related principal hazards and principal control plans. The findings highlight hazards where mine operators need to ensure their risk management controls remain fully effective – this includes ensuring the effectiveness of electrical/mechanical engineering control plans in underground operations and controls for managing fire or explosion hazards in surface operations.

FIGURE 19. COAL MINE INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE APRIL TO SEPTEMBER 2020



Large mines sector

Incident notifications

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

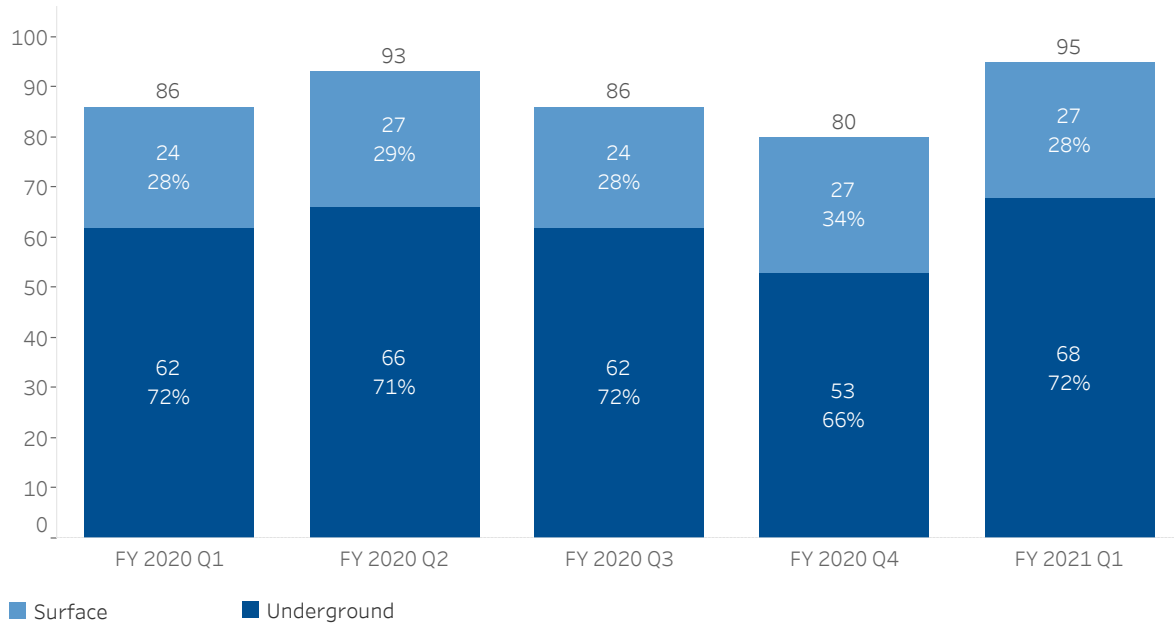
TABLE 3. LARGE MINES AND QUARRIES SECTOR INCIDENT NOTIFICATIONS RECEIVED RATES JULY 2019 TO SEPTEMBER 2020

MEASURE	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	AVERAGE
Incidents	86	93	86	80	95	88
Active mines	37	38	39	39	40	39
Incident rate per active mine	2.32	2.45	2.21	2.05	2.38	2.28
Mines that notified incidents	23	25	25	25	29	25
% of mines notifying an incident	62%	66%	64%	64%	73%	66%
Incident rate per notifying mine	3.74	3.72	3.44	3.20	3.28	3.47

The following graph shows the proportion of safety incident notifications received from large mines and quarries by operation types. During this current quarter, the largest increase in notifications was recorded for underground operations.

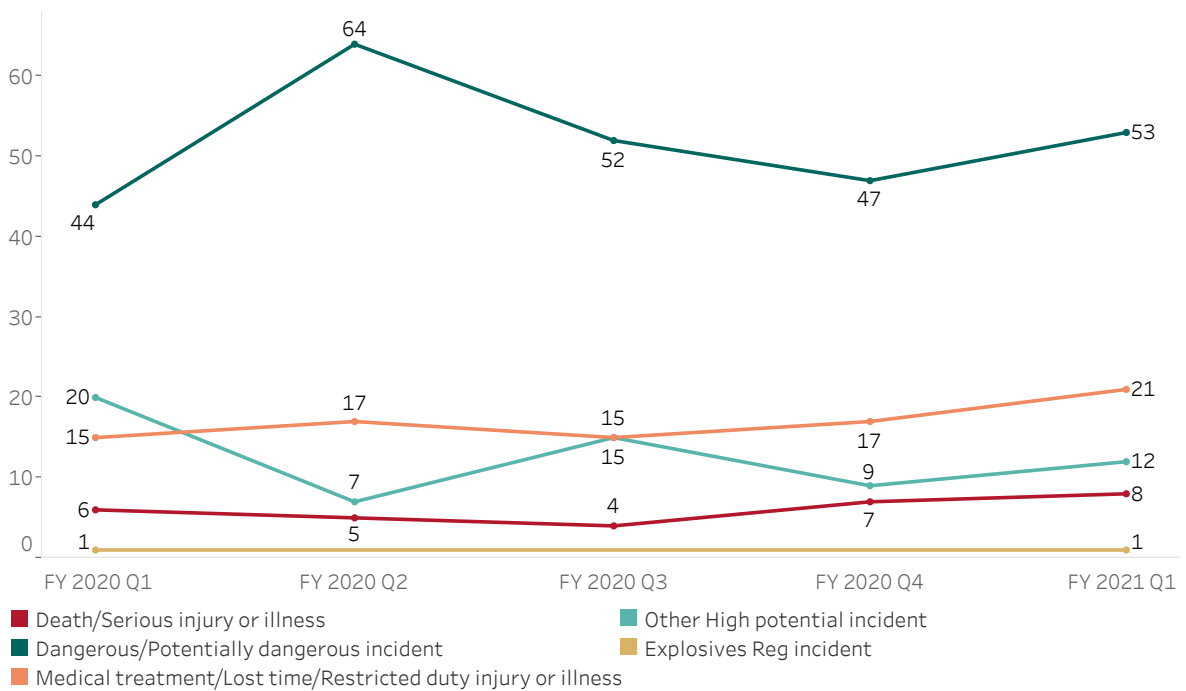


FIGURE 20. LARGE MINES AND QUARRIES INCIDENT NOTIFICATIONS BY OPERATION TYPE JULY 2019 TO SEPTEMBER 2020



The following graph presents a breakdown of safety incidents notified to the Regulator by the large mines and quarries sector by the requirement to report. This quarter, the number of dangerous/potentially dangerous incidents was up slightly on last quarter.

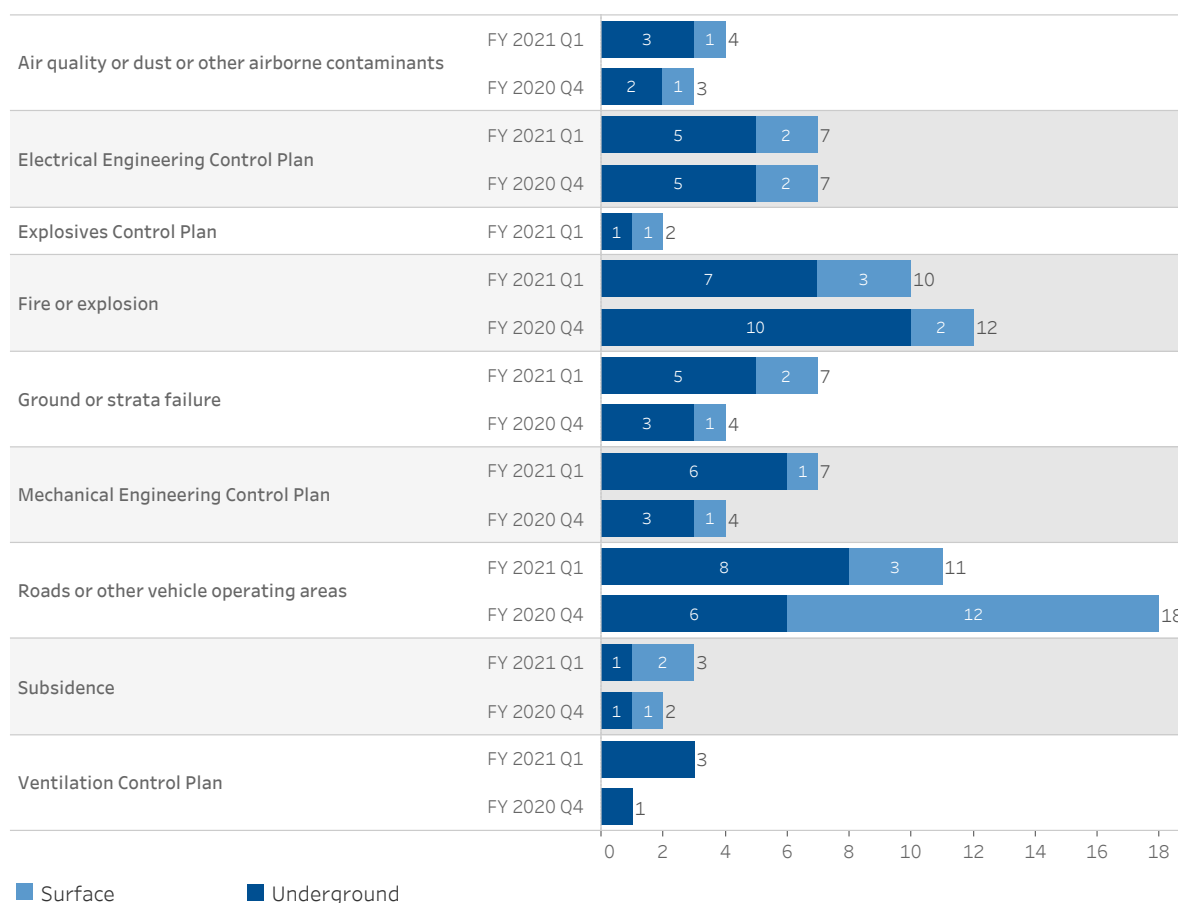
FIGURE 21. LARGE MINES AND QUARRIES INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT JULY 2019 TO SEPTEMBER 2020



Incident notifications by principal hazard

The figure below shows the number of incident notifications received from the large mines and quarries sector during the past two quarters as classified against related principal hazards and principal control plans. The findings highlight hazards where mine operators need to ensure their risk management controls remain fully effective – this includes controls for managing roads or other vehicle operating areas hazards across both operation types.

FIGURE 22. LARGE MINES AND QUARRIES INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE APRIL 2020 TO SEPTEMBER 2020



Small mines sector

Incident notifications

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

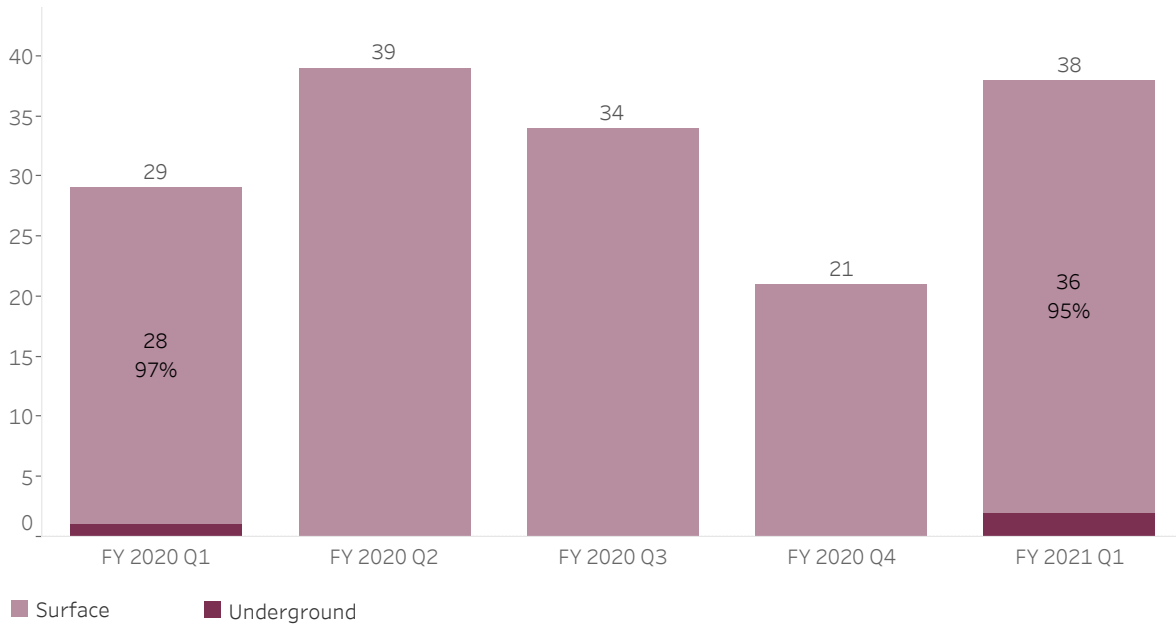
TABLE 4. SMALL MINES AND QUARRIES SECTOR INCIDENT NOTIFICATIONS RECEIVED RATES JULY 2019 TO SEPTEMBER 2020

MEASURE	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	AVERAGE
Incidents	29	39	34	21	38	32
Active mines	2,661	2,695	2,683	2,671	2,658	2,674
Incident rate per active mine	0.01	0.01	0.01	0.01	0.01	0.01
Mines that notified incidents	26	34	26	19	33	28
% of mines notifying an incident	0.98%	1.26%	0.97%	0.71%	1.24%	1.03%
Incident rate per notifying mine	1.12	1.15	1.31	1.11	1.15	1.17



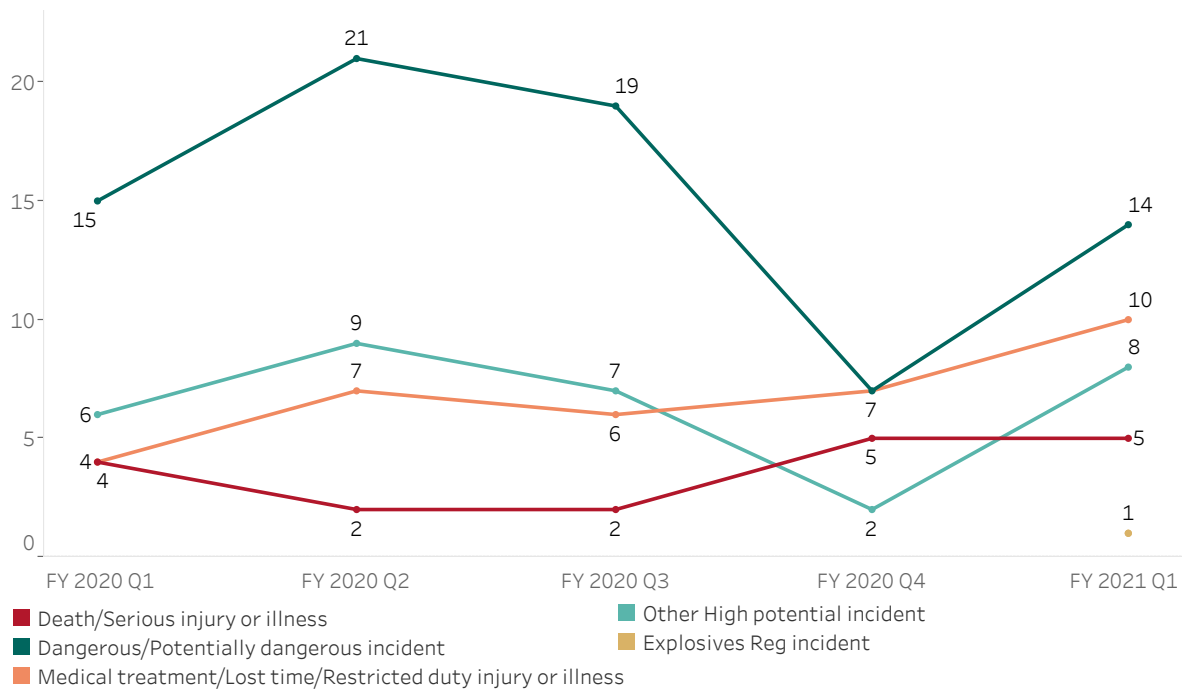
The graph below shows the proportion of safety incident notifications received from small mines and quarries. This quarter saw just over an 70% increase in incidents notified by surface operations.

FIGURE 23. SMALL MINES AND QUARRIES INCIDENT NOTIFICATIONS BY OPERATION TYPE JULY 2019 TO SEPTEMBER 2020



The graph below presents a breakdown of safety incidents notified to the Regulator by the small mines sector by the requirement to report. For three consecutive quarters increasing numbers of medical treatment/lost time/restricted duty injury or illness were notified by the sector. Comparatively, the number of incidents notified by the sector is substantially lower than what is reported by the coal and large mines sector.

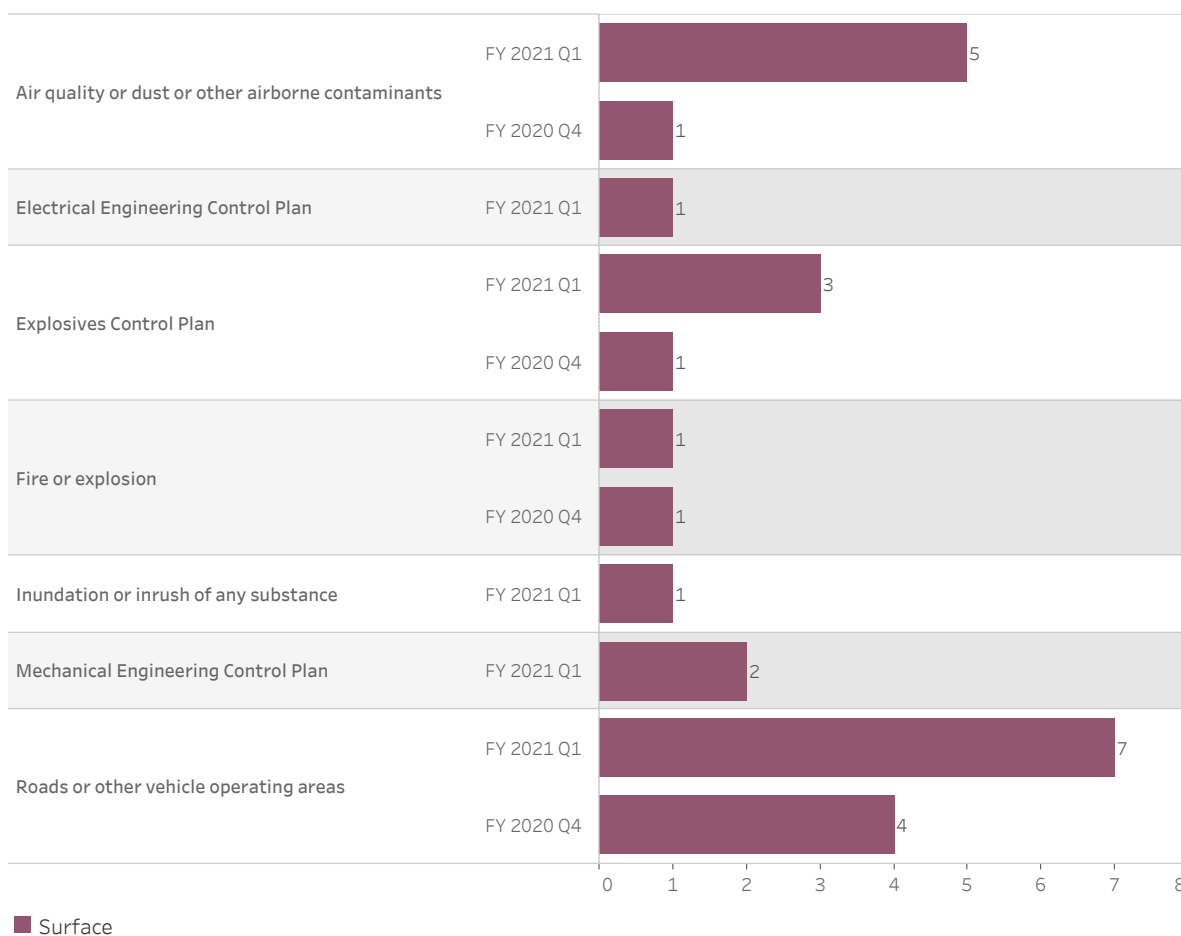
FIGURE 24. SMALL MINES AND QUARRIES INCIDENT NOTIFICATIONS RECEIVED BY REQUIREMENT TO REPORT JULY 2019 TO SEPTEMBER 2020



Incident notifications by principal hazard

The figure below shows the number of incident notifications received from the large mines and quarries sector during the past two quarters as classified against related principal hazards and principal control plans. The findings highlight hazards where small mine operators need to ensure their risk management controls remain fully effective – this includes controls for managing roads or other vehicle operating areas hazards.

FIGURE 25. SMALL MINES AND QUARRIES INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE APRIL 2020 TO SEPTEMBER 2020



Other mines sector profiles

Incident notifications

Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of safety incidents.

This section relates to petroleum and geothermal sites, opal mines and exploration sites. Table 2 below shows the number of incident notifications across the three sectors. Tables 3 and 4 relate to explorations sites only and present the breakdown of the types of incident notifications by requirement to report and by principal hazard.

TABLE 5. PETROLEUM AND GEOTHERMAL SITES, OPAL MINES AND EXPLORATIONS SITES INCIDENT NOTIFICATIONS JULY 2019 TO SEPTEMBER 2020

	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1
Petroleum and geothermal sites*	-	-	-	-	-
Opal mines	2**	-	-	-	-
Explorations sites***	-	2	2	5	3

* includes exploration

** One serious injury/illness and one dangerous incident

*** excludes petroleum and geothermal

TABLE 6. EXPLORATION SITES INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT JULY 2019 TO SEPTEMBER 2020

REQUIREMENT TO REPORT	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1
Death (serious injury or illness)	-	0 (2)	-	0 (2)	-
Dangerous/potentially dangerous incident	-	-	-	1	1
Medical treatment/lost time/restricted duty injury or illness	-	-	2	1	-
Other high potential incident	-	-	2	1	-

TABLE 7. EXPLORATION SITE INCIDENT NOTIFICATION BY PRINCIPAL HAZARD JULY 2019 TO SEPTEMBER 2020

INCIDENT CLASSIFICATION BY PRINCIPAL HAZARD OR PRINCIPAL CONTROL PLAN		FY 2020 Q1	FY 2020 Q2	FY 2020 Q2	FY 2020 Q4	FY 2021 Q1	TOTAL
Principal hazard	Fire or explosion	-	-	1	1	-	2
	Roads or other vehicle operating areas	-	-	-	-	1	1
	TOTAL	-	-	1	1	1	3
Principal control plan	Mechanical engineering control plan	-	-	-	1	-	1
Not applicable	Not applicable	-	2	1	3	2	8
TOTAL		-	2	2	5	3	12



Compliance and enforcement

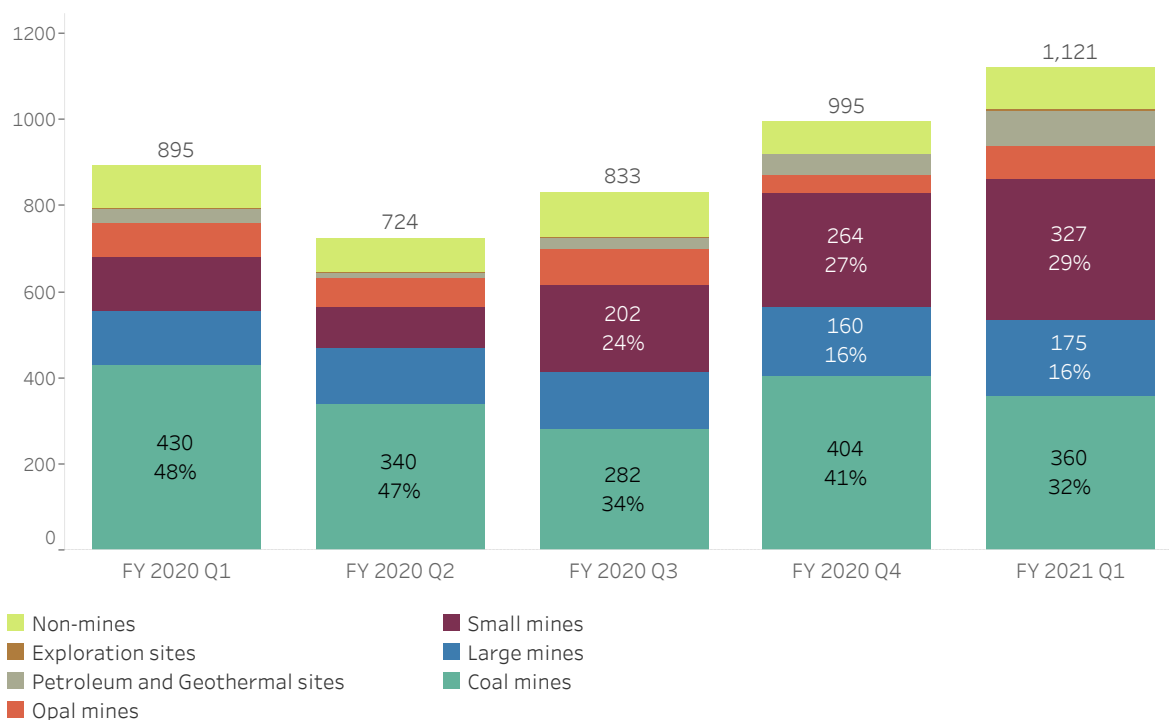
The Regulator uses a range of tools to promote and secure compliance in mines and petroleum sites in relation to work health and safety legislation. These include desktop assessments, site inspections, investigations and enforcement actions, such as issuing notices and commencing prosecutions.

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

Safety assessments by sector

Quarter-on-quarter the number of assessments in the small mines sector has increased since FY2020 Q3. This increase has been driven by multiple assessments being undertaken during a single inspection.

FIGURE 26. SAFETY ASSESSMENTS BY SECTOR JULY 2019 TO SEPTEMBER 2020



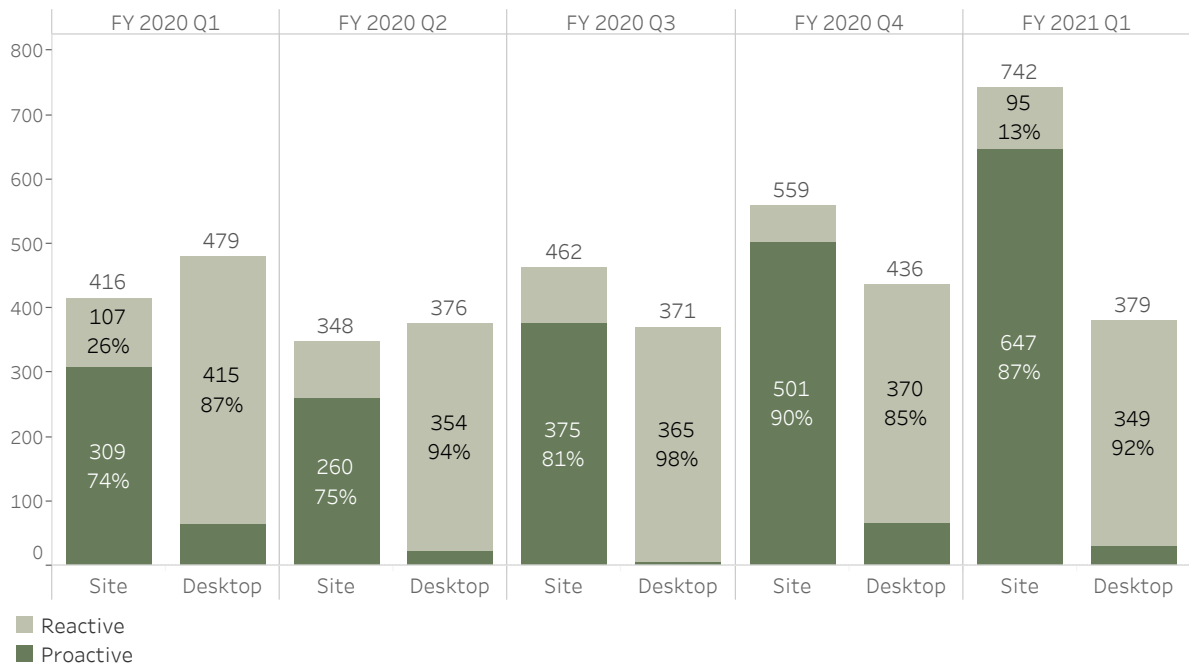
Safety assessments by category and nature

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 personal dust monitoring reports submitted by coal mine operators, assessment of high-risk activity notifications, applications for exemptions from work health and safety laws, subsidence management plans and preparation for site work.

Our proactive assessments on airborne quality or dust contaminants contributed to the spike observed in proactive site assessments during FY 2021 Q1.

FIGURE 27. SAFETY ASSESSMENTS BY CATEGORY AND NATURE JULY 2019 TO SEPTEMBER 2020

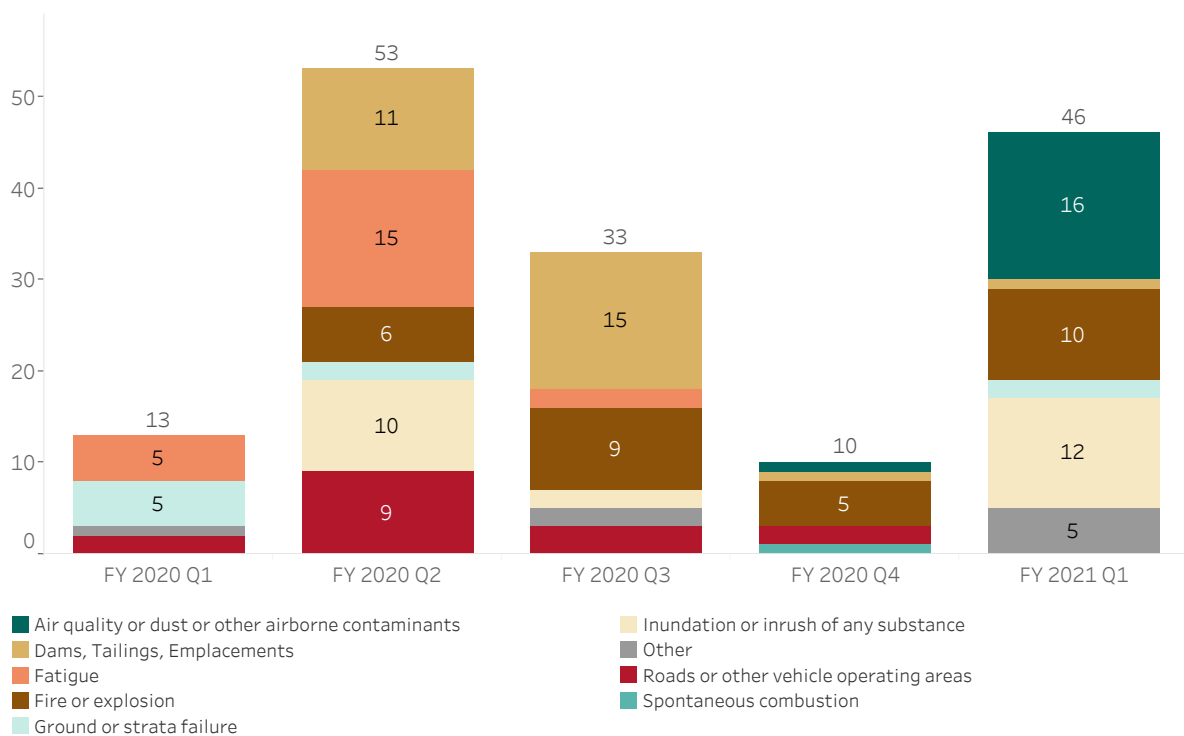


Targeted assessment program

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 identified, implemented and are being monitored.

In the current quarter, 46 targeted assessments were commenced across six different hazards.

FIGURE 28. TARGETED ASSESSMENTS BY HAZARD JULY 2019 TO SEPTEMBER 2020

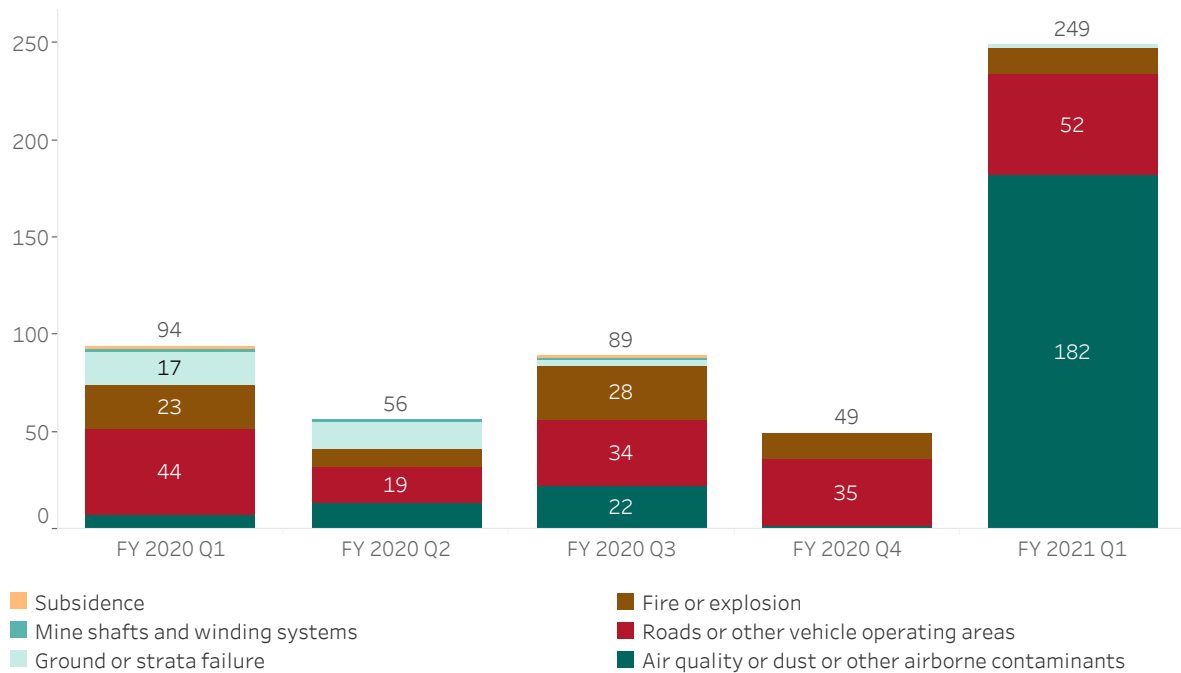


Planned inspections

Planned inspections assist in identifying compliance weaknesses which could lead to an incident or injury. These assessments focus on the physical implementation of critical controls in the operating areas of a mine.

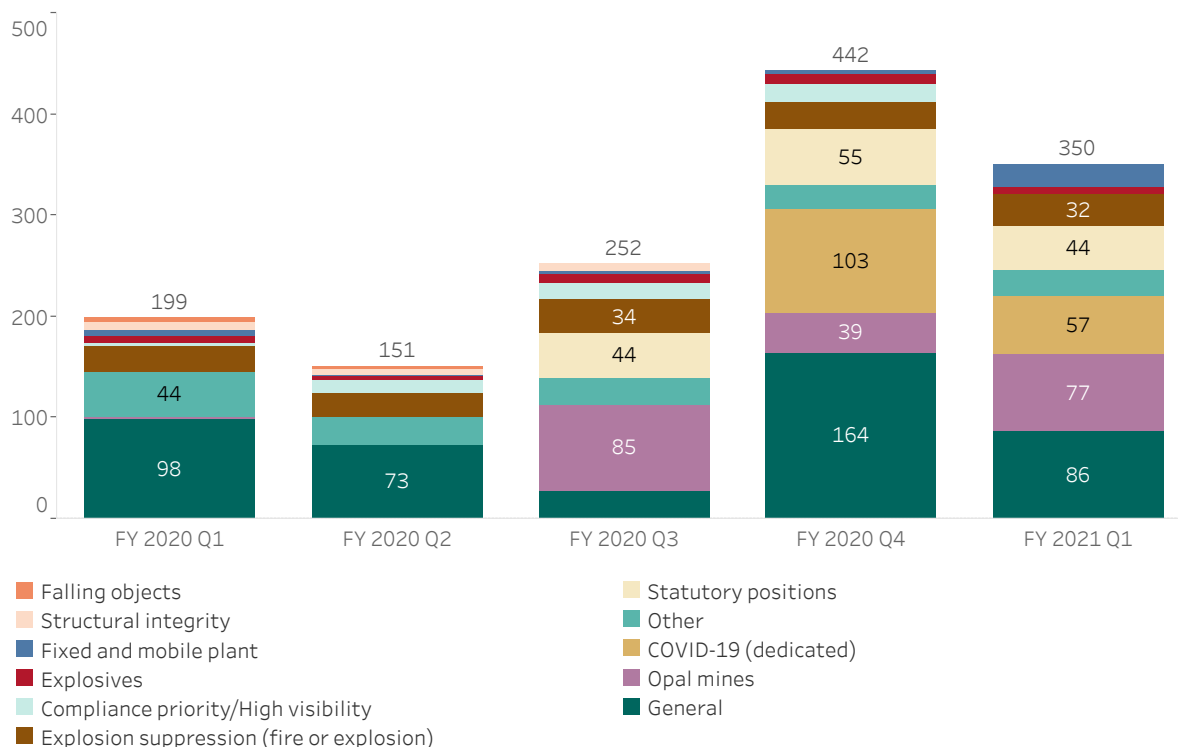
Planned site inspections were commenced on the principal hazards shown in the graph below.

FIGURE 29. PLANNED INSPECTIONS BY PRINCIPAL HAZARD JULY 2019 TO SEPTEMBER 2020



The following graph shows planned site inspections commenced on ‘other’ hazards. Our inspection program on how mine operators were responding to the risks of COVID-19 continued for a second quarter.

FIGURE 30. PLANNED INSPECTIONS BY ‘OTHER’ HAZARD JULY 2019 TO SEPTEMBER 2020



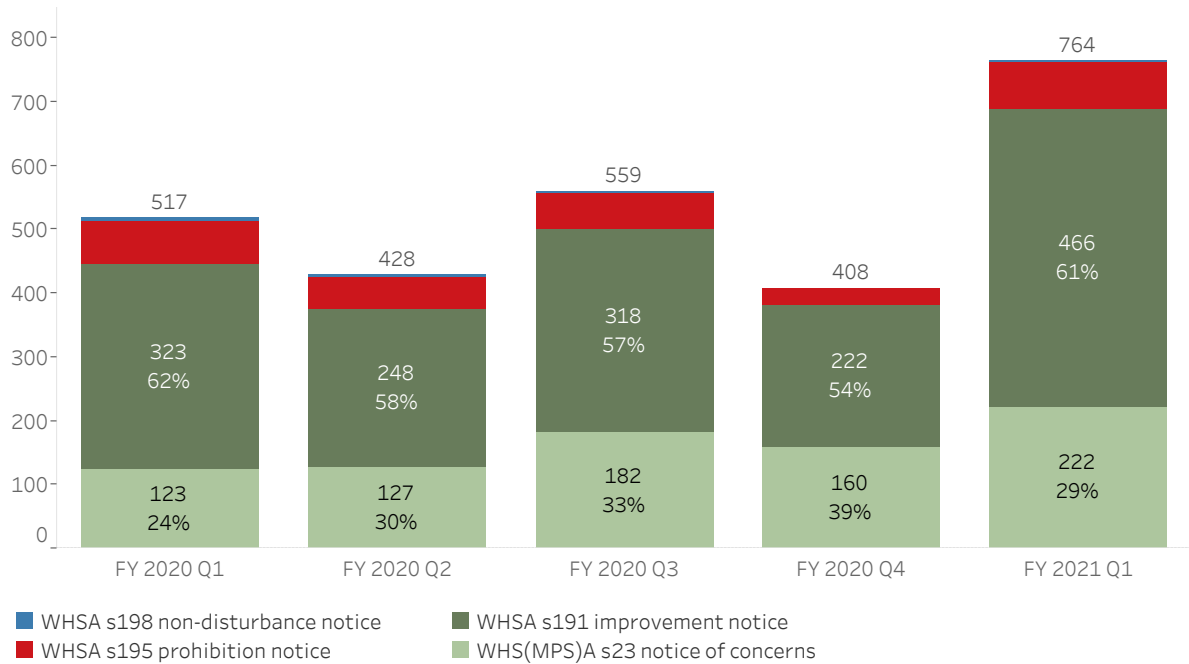
Safety notices issued

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 July 2019. FY2021 Q1 saw an increase in the number of notices issued. The increased number of proactive and reactive programmed assessments undertaken during the quarter contributed to this increase. Of the 764 notices issued, 671 originated from programmed assessments. Of the 75 prohibition notices issued during the quarter, 17 were for issues identified in a single quarry in the small mines sector during the mechanical hazards (fixed and mobile plant equipment) program plan. In the underground metalliferous sector, 10 prohibition notices were issued under the air quality or dust airborne hazards program plan.



FIGURE 31. SAFETY NOTICES ISSUED BY NOTICE TYPE JULY 2019 TO SEPTEMBER 2020



The figure below shows safety notices issued by mining sector. For the July – September 2020 quarter, almost 40% of safety notices were issued to small mines, making it the largest contributing sector to the number of notices issued for the third quarter running.

FIGURE 32. SAFETY NOTICES ISSUED BY SECTOR JULY 2019 TO SEPTEMBER 2020

