NSW GOVERNMENT

NSW Resources Regulator

Quarterly safety report

October to December 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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NSW GOVERNMENT

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 NSW 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 for the quarter of October to December 2020 (FY2021 Qtr2). For selected measures, data is analysed over a 15-month period from October 2019 to December 2020.

There was one mining-related fatality in NSW, during the quarter. This incident is currently under investigation.

In this quarter, total incident notifications received by principal hazard were down slightly (198 to 195). This figure, however, remains 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; spontaneous combustion, ground or strata failure and air quality or dust or other airborne contaminants. The increase in dust or other airborne contaminants notifications is likely due to changes in the workplace exposure standard for crystalline silica which came into effect on July 1, 2020.

Incident notifications received by principal control plans were down from the previous quarter. The only exception to this decrease, were incident notifications received under the explosives control plan. These notifications increased 22% from the previous quarter's notifications.

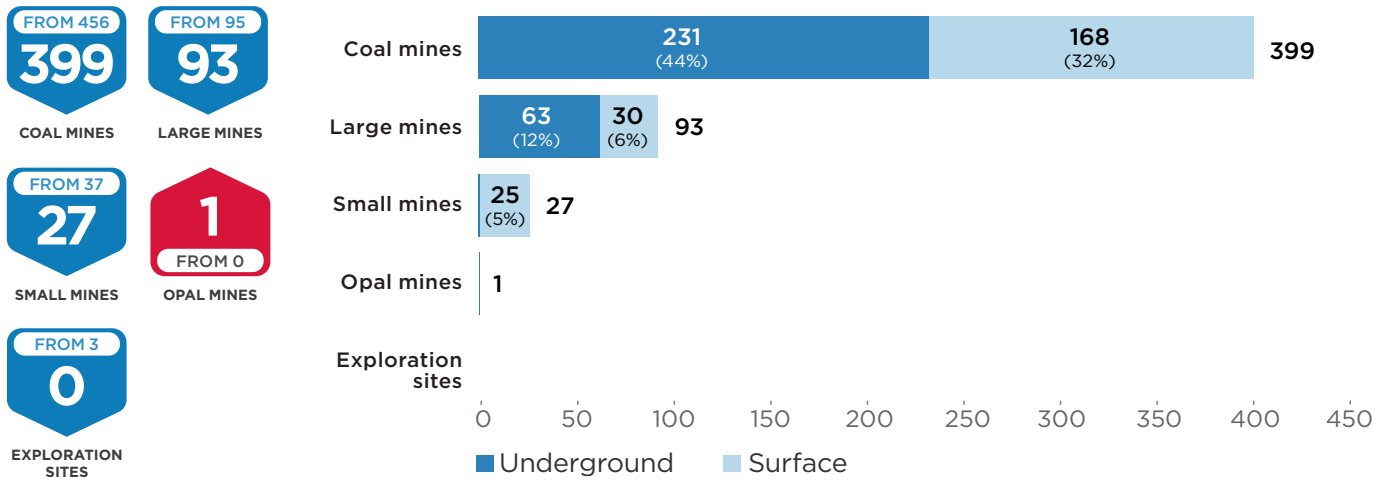
Quarterly snapshot

NSW Resources Regulator

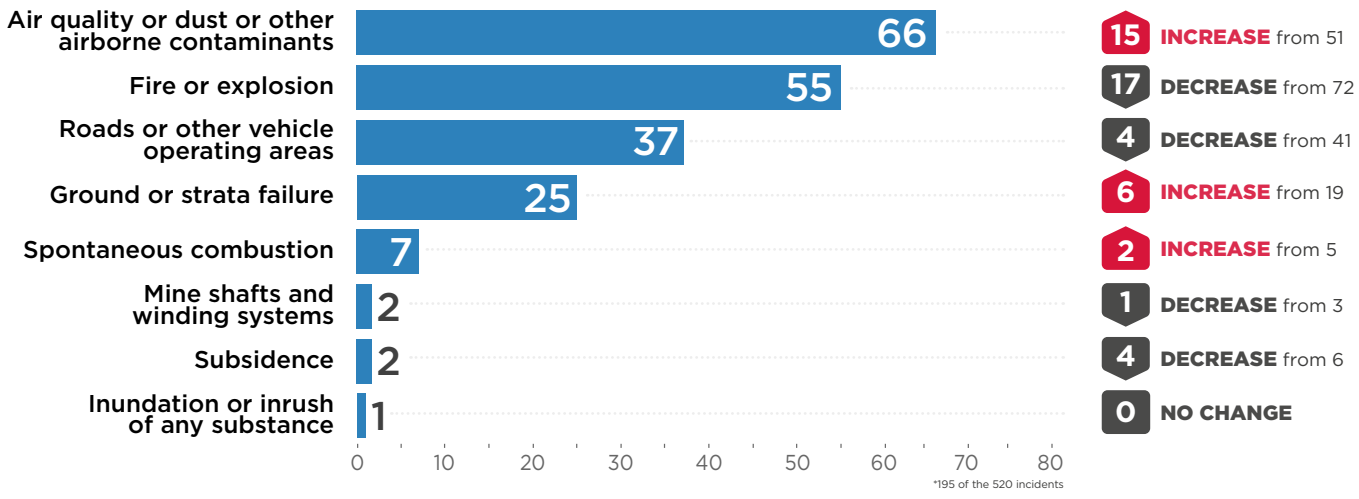
The quarterly safety performance snapshot show key measures and assist industry in the development and promotion of safe work practices on mining operations.

* 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

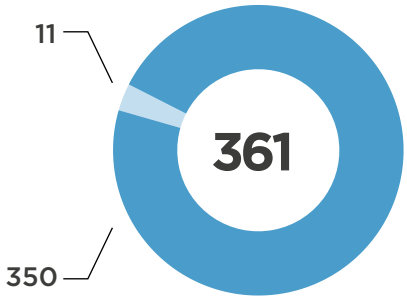
NSW Resources Regulator

884
Assessments commenced

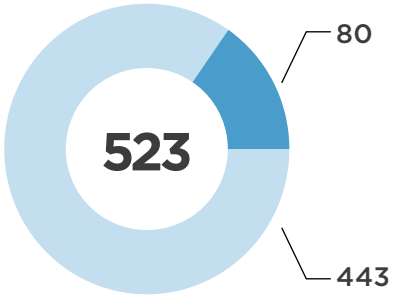
Proactive

Reactive

Desktop Assessments

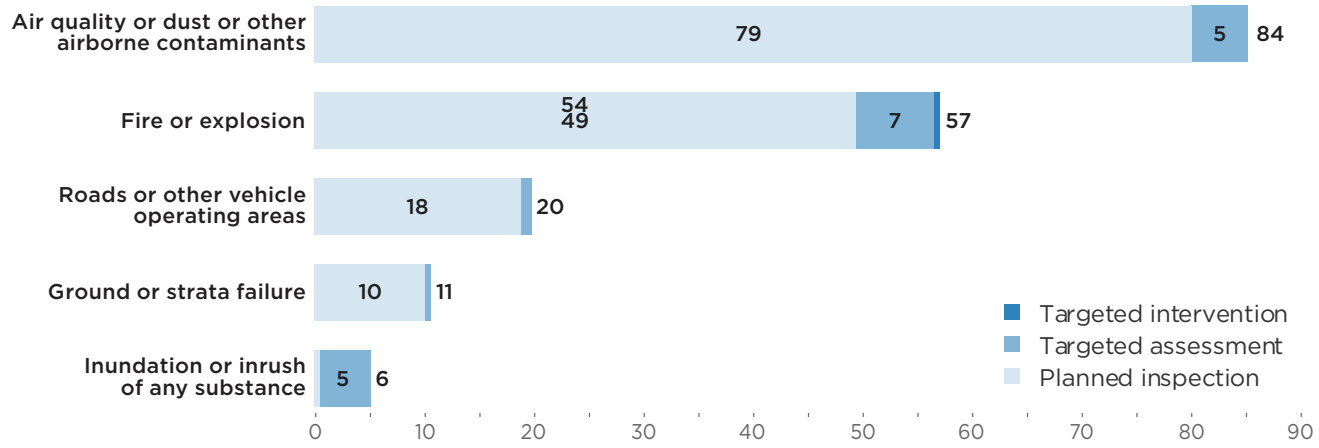


Site Assessments



FROM 372	FROM 178	FROM 336		FROM 80	FROM 4	
308	123	214	88 FROM 81	55	1	95 NO CHANGE
COAL MINES	LARGE MINES	SMALL MINES	PETROLEUM AND GEOTHERMAL SITES	OPAL MINES	EXPLORATION SITES	NON-MINES

Programmed site assessments conducted



598 notices issued

- **365** WHSA s191 improvement notices
- **3** WHSA s198 non-disturbance notice
- **199** WHS(MPS)A s23 notices of concerns
- **31** 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 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 **October to December 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 one fatality reported in this quarter.

- On 14 October 2020, an opal miner went from an underground opal mine to the surface to investigate a fault with the mine's material hoist. He was found unresponsive in the sump of the hoist shaft a short time later. The sump was approximately seven metres beneath the surface. He was later declared to be deceased.

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.

- On 15 December 2020, a female underground mine worker, was struck and fatally injured by an underground haul truck. The incident is currently under investigation.

International

UNITED STATES OF AMERICA

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

- On October 9 2020, a contractor with eight years of mining experience,

was changing the nozzle on a hydroseeder and accidentally engaged the hydroseeder's clutch while the nozzle was pointing towards him. The material sprayed from the nozzle struck him, causing him to fall backward and strike his neck on the hydroseeder handrail. For more information refer to the fatality alert.

- On October 13 2020, an underground coal miner with 30 years of mining experience, died after being struck by a battery-powered scoop. He had parked his shuttle car in an intersection and was exiting when a scoop went through a ventilation curtain in an adjacent crosscut and struck him. For more information refer to the fatality alert.
- On October 14 2020, a supervisor at a granite quarry with 25 years of mining experience, died when his light vehicle was hit by a haul truck. For more information refer to the fatality alert.
- On October 19 2020, a plant operator with two months of mining experience, was standing on the cross beam of a screening plant when he was struck by the bucket of an excavator, crushing the victim between the screening plant and the excavator bucket. For more information refer to the fatality alert.
- On October 27 2020, a miner with approximately seven years of mining experience, died from a roof fall. At the time of the accident, the victim was installing a wooden post for roof control. For more information refer to the fatality alert.
- On November 8 2020, a bulldozer operator with 41 years of mining experience, was fatally injured in a vehicle fall. The bulldozer was pushing blasted rock from a bench down to a front-end loader. As the bulldozer backed up the slope, it veered to the right and over the edge of the highwall. The bulldozer rolled approximately 308 feet downhill and came to rest on its left side. For more information refer to the fatality alert.
- On November 23 2020, an underground mine worker with approximately one year of mining experience, was fatally injured. The worker was operating a scoop when he ran over a piece of four-inch plastic pipe. A piece of the pipe entered the scoop's operators compartment striking the victim and pinning him against the canopy. For more information refer to the fatality alert.
- On November 23 2020, a maintenance mechanic with approximately one year of mining experience, was electrocuted while he was troubleshooting a disconnect box for classifier drive motor. The worker had the electrical disconnect box open and the main power supply was not de-energized. For more information refer to the fatality alert.
- On December 14 2020, two underground miners died when a back failure occurred in a large four-way intersection. The miners were pumping sealing grout in the intersection when blocks of salt and anhydrite fell from beneath a slickenside onto the miners. For more information refer to the fatality alert.

- On December 15 2020, an experienced tyre technician at a sandstone mine, was fatally injured while attempting to change the rear right hand side tyre, of a Caterpillar 992D Front-End Loader. The worker was underneath the loader when it fell. For more information refer to the fatality alert.

National and international incidents by hazard

Ground or strata failure

- **(Western Australia)** A wall failure occurred at an open pit. A 100-metre section of wall adjacent to an excavator work area slumped during the night. The excavator was relocated to a dig area away from the slump. The area was coned off prior to inspection in daylight hours. The slump caused the water drain and catchment windrow to fill up with sand and clay material. An investigation commenced. Refer to the summary.
- **(Western Australia)** A wall failure occurred at an open pit with approximately 550 cubic metres of material slumping over several berms. No precursor movement was detected by prism monitoring. No one was injured and pit operations were not affected. An investigation commenced. Refer to the summary.

Roads or other vehicle operating areas

- **(New Zealand)** A loaded ADT was on a ramp leaving the pit as the operator attempted to merge onto a haul road. As he turned onto the haul road the tray overturned and the cab of the articulated truck remained upright. Refer to the safety alert.
- **(Queensland)** A service truck was travelling down a ramp. At the top of the ramp the truck was placed in second gear to control the speed of travel down the ramp. The operator then applied the brakes to further slow the vehicle. The brakes became ineffective and didn't apply braking force. The operator steered the truck into a pile of material to stop the truck movement. Refer to the safety alert.
- **(Queensland)** A medium vehicle, which was under escort, collided with another medium vehicle that was turning left off the access road that they were travelling on. There were no injuries, however the vehicle was significantly damaged. Refer to the incident periodical (Oct).
- **(Queensland)** An overburden blast hole drill was tramming up a ramp when it lost all forward travel motion. It then rolled backwards down the ramp about four metres before coming to a stop under its own control. Refer to the incident periodical (Oct).

- **(Queensland)** A 350 tonne excavator working on a bench was tramming when an uncontrolled movement off the bench occurred, resulting in the machine toppling over onto its side. The relatively inexperienced operator was not injured and extricated unassisted via a portable ladder provided by the emergency response team. Refer to the incident periodical (Oct).
- **(Queensland)** A water cart was descending a recently watered ramp when it lost traction with all wheels in a wet line. This resulted in the truck contacting roadside bunding and then rolling over 180 degrees coming to rest on its roof. The operator was reported as having minor lower back pain. Refer to the incident periodical (Oct).
- **(Western Australia)** Two loaders contacted each other during loadout and crusher feeding operations at a processing plant. One was tramming and the other was reversing in limited space. An investigation was commenced. Refer to the summary.
- **(Western Australia)** A loaded haul truck was travelling down the ramp at an underground mine when the operator noticed that the engine speed was increasing, and the retarder would not slow the truck down. The operator applied the service brake and the emergency brake and brought the truck to a controlled stop. Mechanical inspection found that the retarder function had failed. The fault was identified as a frayed wiring harness which caused an electrical fault in the retarder control. Refer to the summary.
- **(Western Australia)** While unloading sand at a processing plant, a road train tipper trailer overturned onto its side when the mechanical ram was being extended. No one was injured. An investigation was commenced. Refer to the summary.
- **(Western Australia)** As a wheel loader went down the ramp at a processing plant, the rear wheels of the machine lost traction and slid slowly to the side of the ramp. The operator applied the service brake and grounded the bucket where the machine came to rest on the windrow. There were no injuries or damage caused by the incident. Refer to the summary.

Fire or explosion

- **(New Zealand)** A loader operator noticed smoke while in the cab of a loader. Looking behind him, he saw flames behind the cab. Refer to the safety alert.
- **(Queensland)** Recent testing in relation to fire resistant anti-static (FRAS) rated products has established that two FRAS-rated products have failed to meet the fire resistance and/or electrical resistance standards. Refer to the safety alert.
- **(Western Australia)** A wheel loader operator at an open pit called breakdown control with a hydraulic steering alarm. The operator parked up and noticed a loss of hydraulic fluid on the gauge. Shortly afterwards, the operator saw smoke and inspected the engine bay where they found a small

flame. The aqueous film-forming foam (AFFF) fire suppression system was manually activated, and an emergency was called. The fire was put out with a dry chemical powder (DCP) fire extinguisher. The loader was isolated. An investigation commenced. Refer to the summary.

- **(Western Australia)** A semi water truck had just completed filling up when the operator noticed the dash and headlights dimmed. A fault code appeared and the truck lost acceleration. The operator checked the mirrors and saw flames coming from behind the cab. They pulled the truck over and used a dry chemical powder (DCP) fire extinguisher to put out the fire. Initial investigation found that cables had rubbed and worn through. Refer to the summary.
- **(Western Australia)** A fire alarm went off following maintenance at a processing plant power station. The fire was put out with a dry chemical powder (DCP) fire extinguisher and the area doused with water. Rags left near the engine on the shelf had started smouldering. During clean up, the rags were grouped together and put in a plastic container before the workers left the area. Refer to the summary.
- **(Western Australia)** A fire broke out on an excavator at an open pit. The aqueous film-forming foam (AFFF) fire suppression system was manually activated and initially put out the fire. Several spot fires reignited and were put out with three dry chemical powder (DCP) extinguishers. The fire was caused by a blown hydraulic oil hose on the boom. Refer to the summary.
- **(Western Australia)** A shovel was loading a haul truck when the haul truck operator noticed a coolant leak and informed the shovel operator. The shovel operator grounded and went to inspect the cause of the leak. He saw a flame in the engine bay and put it out with a dry chemical powder (DCP) extinguisher. The coolant leak was caused by a clamp failure. An investigation commenced. Refer to the summary.
- **(Western Australia)** An operator was tramming a drill rig from one hole to the next at an open pit. When they looked through the drill rig trap door, they saw fluid burning on the ground. The operator shut down the drill rig and manually activated the aqueous film-forming foam fire (AFFF) suppression system which put out the fire. Initial investigation found that an electrical wiring harness had shorted out and melted a diesel fuel return line. Refer to the summary.
- **(Western Australia)** A haul truck operator saw flames coming from the truck's exhaust stack. The operator stopped the truck and called an emergency. The emergency response team attended and put out the fire. Preliminary investigations indicate that the turbo failed, causing oil to run through the exhaust and ignite. Refer to the summary.

Air quality or dust or other airborne contaminants

- **(Western Australia)** A few hours after a stope firing on a level, a worker was setting up stope sprays at the brow when they felt dizzy and unwell. The worker was taken for assessment and monitoring by the site medic, before returning to normal duties. An investigation commenced. Refer to the summary.

Incidents by principal control plan

Mechanical engineering control plan

- **(Western Australia)** While working near a high-pressure positive displacement pump at a processing plant, an operator saw that a nipple fitting had failed, releasing hot non-acidic slurry upwards and spraying over a wide area. A supervisor was notified and the pump was stopped. No one was injured. An investigation commenced. Refer to the summary.
- **(Western Australia)** A water cart was driving across an open pit road when the operator heard a noise from the rear of the cab before it tilted forward and came to rest on the ground. The operator was uninjured. An inspection found the oscillating hitch failed causing the cab to separate from the tank. All vehicles with a similar articulation section were stood down pending the outcome of an investigation. Refer to the summary.

Explosives control plan

- **(South Australia)** SafeWork SA received notification of an explosive's incident in an underground mine, following the unplanned electronic initiation of two development headings. The development headings were unintentionally initiated at the same time as a decline heading, which was planned to be fired independently. Refer to the safety alert.

Electrical engineering control plan

- **(Queensland)** A dozer walked onto a dragline's high voltage tail cable. This resulted in the earth continuity tripping the power back at the sub-station. An inspection of the cable revealed exposed conductors. Refer to the incident periodical (Oct).
- **(Western Australia)** A service crew operator received an electric shock when they were replacing the dummy plug into the receptacle of the wiring harness for the emergency lowering system at an underground mine. Investigation found that the outer sheath of a wire had worn through exposing the wiring. Refer to the summary.

- **(Western Australia)** A fitter at a processing plant was installing a portable electric sump pump when they received an electric shock while setting the float height and testing the unit. An inspection found the insulation on the electrical cable was damaged. Refer to the summary.
- **(Western Australia)** An electrician at an underground mine was commissioning an electric jumbo starter box at the distribution board in an ore drive when they saw the adjacent circuit breaker was off with no identification tags. The electrician switched the circuit breaker on, and the power tripped at the substation. An inspection found the starter box had short circuited due to an incorrect feed cable being cut and repositioned. No one was injured. An investigation was commenced. Refer to the summary.

Other dangerous or high potential incidents

- **(Western Australia)** An operator parked a tele remote vehicle (TRV) at an underground mine. After setting up lasers, the operator turned the ignition on the TRV so they could access accessories from outside the vehicle. The TRV moved forward and pulled the operator along the wall. His leg was dragged over a large rock and extended before the TRV could be stopped, resulting in knee strain. Refer to the summary.
- **(Western Australia)** A fixed plant operator at a processing plant was preparing to adjust the secondary crusher gap when they struck in the middle of the upper back by a falling rock weighing approximately 6kg. The operator was examined by the site medic before being transferred to a regional hospital for assessment. An investigation commenced. Refer to the summary.
- **(Western Australia)** A fitter at an underground mine had de-isolated a compressed air line in a shaft sub brace tunnel when they stepped onto a grid mesh platform, which failed and gave way. A redundant poly line passing through the grid mesh stopped the worker falling into the shaft. No one was injured. An investigation commenced. Refer to the summary.

Other serious injuries

- **(Queensland)** An excavator's retractable access ladder was in the process of lifting, when a coal mine worker positioned themselves near the top of the ladder, facing the machine room wall. The ladder completed its lifting cycle and trapped the workers foot between the floor and the rotating handrail. Refer to the safety alert.
- **(Queensland)** A coal sampling lab technician was cleaning out the hopper of a Wallaby coal sample crushing benchtop machine, when the raised access cover fell forward and down onto the person's right hand. Refer to the incident periodical (Oct).
- **(Western Australia)** While placing a 60kg pump down a bore, a worker at a processing plant suffered a laceration to their forearm when it caught on a steel collar. Refer to the summary.
- **(Western Australia)** A rigger at a processing plant was attempting to relocate a loose main rope line on a crane sheave when the hook block, which had been snagged, dropped 50-100mm causing the wire rope to crush the rigger's hand against the sheave. An x-ray showed the rigger suffered a fractured finger. An investigation commenced. Refer to the summary.

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 520 incident notifications received in the current quarter. Of these, 38% (195) related to principal hazards, 26% (135) related to principal control plans and the remainder related to other incidents.

TABLE 1. INCIDENT NOTIFICATIONS CLASSIFIED BY PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN OCT 2019 TO DEC 2020

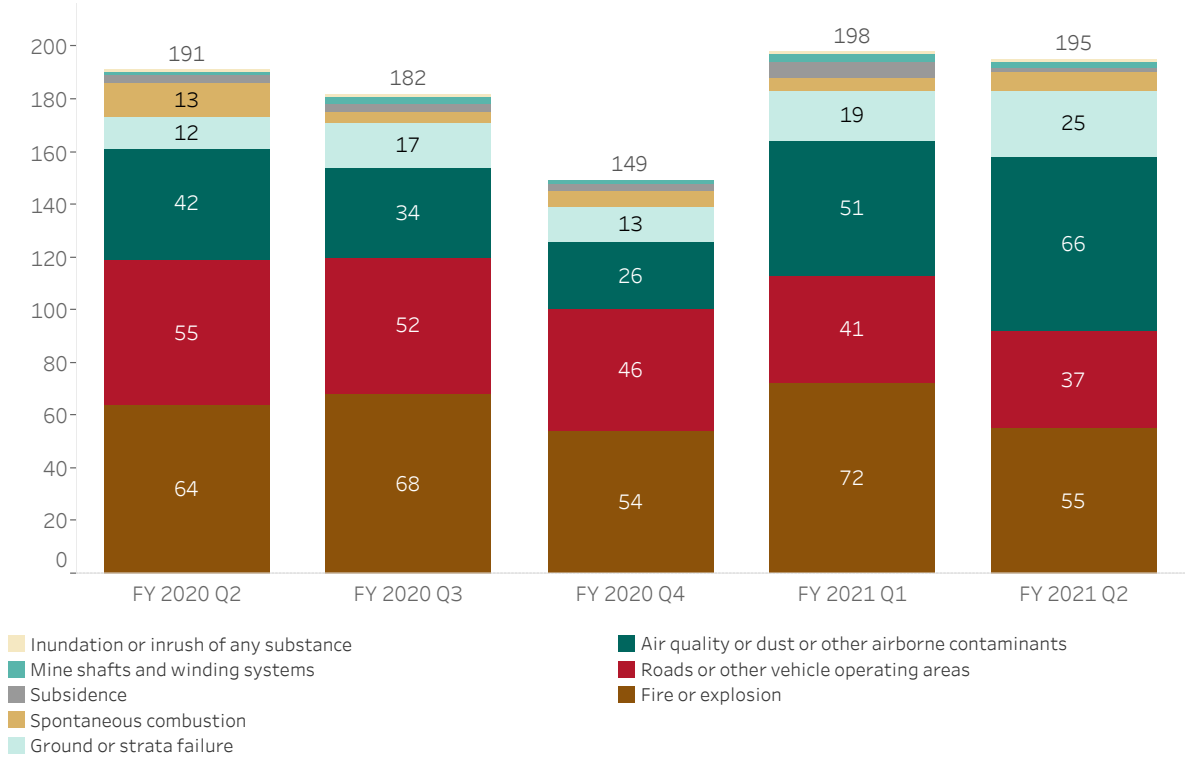
INCIDENT PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN CLASSIFICATION		FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	FY 2021 Q2	LAST 12 MONTHS
Principal hazard	Air quality or dust or other airborne contaminants	42	34	26	51	66	177
	Fire or explosion	64	68	54	72	55	249
	Gas outbursts						0
	Ground or strata failure	12	17	13	19	25	74
	Inundation or inrush of any substance	1	1		1	1	3
	Mine shafts and winding systems	1	3	1	3	2	9
	Roads or other vehicle operating areas	55	52	46	41	37	176
	Spontaneous combustion	13	4	6	5	7	22
	Subsidence	3	3	3	6	2	14
	Total	191	182	149	198	195	724
Principal control plan	Electrical Engineering Control Plan	26	24	23	27	16	90
	Electrical and/or Mechanical Engineering Control Plan	72	51	51	56	44	202
	Explosives Control Plan	18	13	24	23	28	88
	Mechanical Engineering Control Plan	55	78	55	62	42	237
	Ventilation Control Plan	8	3	2	5	5	15
	Total	179	169	155	173	135	632
Other	Other incidents not PH or PCP	184	175	176	220	190	761
GRAND TOTAL		**554**	**526**	**480**	**591**	**520**	**2,117**

Principal mining hazards

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

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 OCTOBER 2019 TO DECEMBER 2020

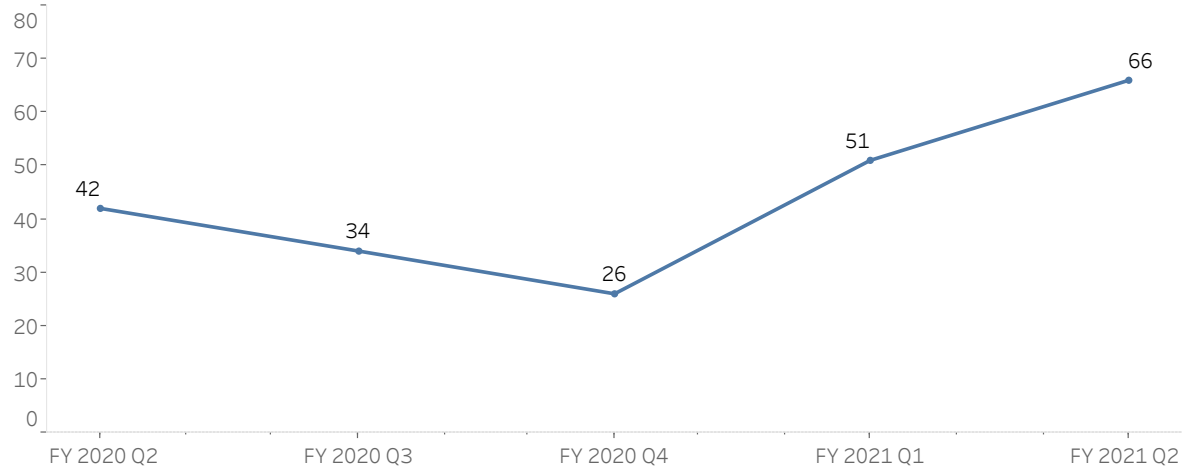


Air quality, dust or other airborne contaminants

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).

Since mid-2020, a steady increase in the number of notifications related to the principal hazard - air quality and dust contaminants has been observed. Since Q4 FY2020, the number of notifications related to exceedances in the detection of respirable dust and atmospheric crystalline has more than doubled from 26 to 66 in Q2 FY2021. These increases relate to the halving of the exposure standard for crystalline silica from 0.1mg/m^3 to 0.05mg/m^3 and the additional environmental monitoring being undertaken by mining operators. More information about airborne contaminants and dust and the updated exposure standards can be found on our website.

FIGURE 2. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD AIR QUALITY, DUST OR OTHER AIRBORNE CONTAMINANTS OCTOBER 2019 TO DECEMBER 2020



HIGH POTENTIAL INCIDENT – MECHANICAL CLEANING CREATES DUST HAZARD

A contract maintenance worker (fitter) at a quarry, recorded three times the occupational exposure limit (OEL) for respirable quartz, during his shift. At the time of the exposure, the worker was relining the bottom crusher plant at the quarry and was using a wire wheel on an angle grinder to clean the inside of the upper assembly of the MVP 450.

The worker was observed wearing a P2 mask throughout the operation.

Conditions in the quarry, at the time, were deemed to be typical (warm and dry with a north easterly breeze).

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

Recommendations include:

- Amend work practices to eliminate the need for wire wheel cleaning. This will help reduce liberating dust fines in the work environment.
- In dusty work environments, implement hosing down of crusher parts before works are carried out.
- Ensure further monitoring of maintenance work, to ensure controls implemented have had the desired impact and reduced exposure.

HIGH POTENTIAL INCIDENT – UNVENTILATED AREA RISES TO ABOVE 2% METHANE

During a routine inspection at an underground coal mine, the auxiliary fan in one of the panels, was found to be not running. This subsequently caused a lack of ventilation to several cut throughs and allowed methane to accumulate in the unventilated heading to above 2%.

The fan had apparently tripped due to vibration while there were no workers in the area.

The unventilated heading was immediately 'no-roaded', the fan inspected and restarted. Degassing of the heading was commenced soon after.

An investigation into the incident looked at whether the area had adequate suction based on gas flows for initial drilling.

Preventative actions

- Ensure ventilation design considers suction requirements for individual Authority to Mine (ATM) areas, based on sequencing.
- Amend ATM to include a requirement that while operating in a precautionary zone, checks at end-of-line on suction hose, to confirm suction range. If positive pressure is recorded, immediate steps must be taken to provide suction and notify responsible personnel.

Recommendations include

- 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.

Ground or strata failure

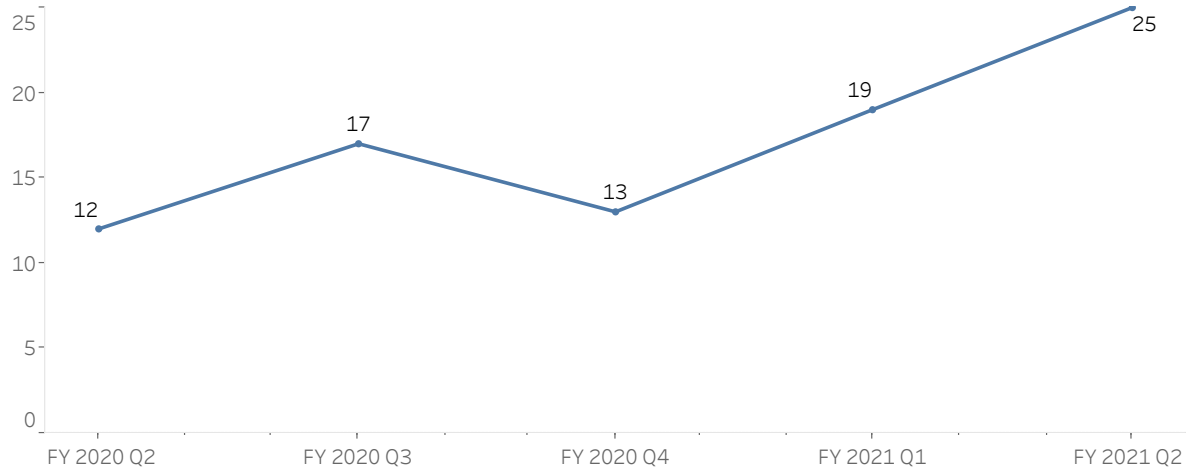
25
FROM 19

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.

During the past six months we have seen quarter-on-quarter increases in notified incidents related to the principal hazard; ground or strata failure.

While the large mines sector has largely contributed to this observed increase, proactive assessments focussed on this hazard are scheduled for the coal, metalliferous and petroleum sectors during January to June 2021. See our Compliance Priorities for January to June 2021 for more details.

FIGURE 3. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD GROUND OR STRATA FAILURE OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – ROOF 'SCAT' HITS WORKER

An electrician and apprentice electrician were working on an incline at an underground metal mine, running out a shot firing line, when a piece of "scat" roof material (hand sized - 1.1kg) fell. The material fell through the mesh and struck the apprentice on the helmet, while he was in a high lift man basket. The impact stunned the apprentice and he reported feeling soreness around the helmet area of his head.

The worker was transported to the surface for first aid and then to hospital for further assessment. He was discharged a short time later.

HIGH POTENTIAL INCIDENT – RIB FAILURE

On 18 October 2020, a mining supervisor was driving into the longwall Restricted Access Zone (RAZ), when he noticed rib spall along the roadway and in-bye of a cut through corner. He had the area cordoned off and reported the incident.

The following day a geotechnical inspection was conducted of the area. The inspection found that the extent of spall began 10 metres in-bye from cut through corner and measured 7 metres x 1.2 metres deep. The spall was in an area with mixed bolts (cuttable and steel bolts) in the chain pillar and the rib showed loading (and visible cracks) on the side abutment.

The cuttable bolts had shed their plates and lost confinement due to the abutment loading on the chain pillar. The weight of the rib slab then overloaded the row of steel bolts and the rib slumped out. An inspection of the area either side of the spall, showed the steel bolts under load, but the rib intact.

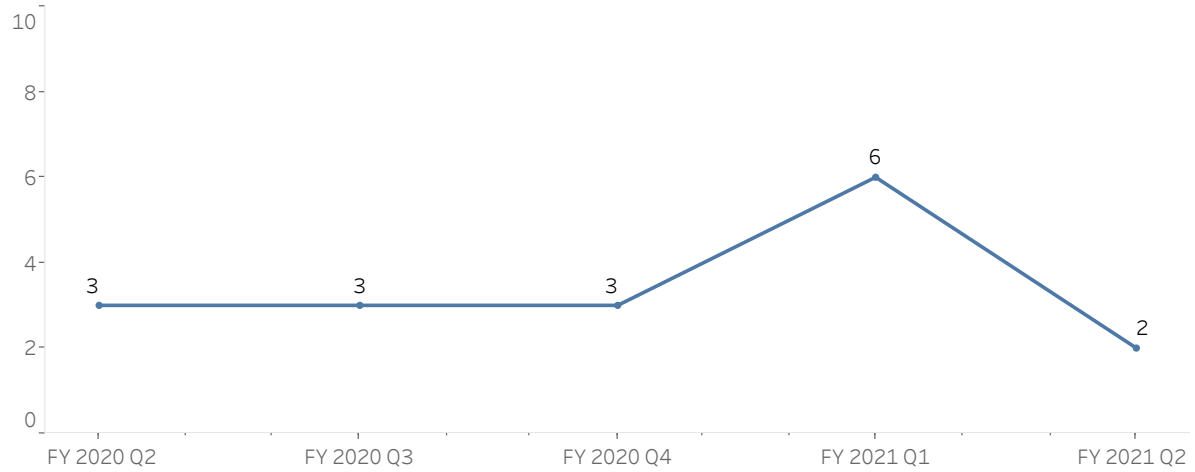
Actions taken

- Area was cleaned up
- A review of the Strata Failure PHMP support design.
- Scheduled re-support of rib
- Review of support requirements of ribs with abutment loading and confinement.

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 OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – SUBSIDENCE EVENT

A quarry manager witnessed a hole appear in weathered material next to a concrete kerb on an overburden embankment. There was pooling water swirling and gurgling at the location indicating water had accumulated due to a recent rain event.

The road was closed to all vehicles and water was redirected. Approximately 45 minutes later a section of the bank slumped out of the hillside.

Comments to industry

Mine operators must have safe systems of work in place to inspect highwalls, low walls and dumps. These inspections must consider weathering effects, ground water and conditions that affect the stability. Following several incidents where people and equipment have been exposed to significant health and safety risks as a result of highwalls, low walls and dumps failing, we have published a Safety Bulletin SB20-01 Failure of highwalls, low walls and dumps.

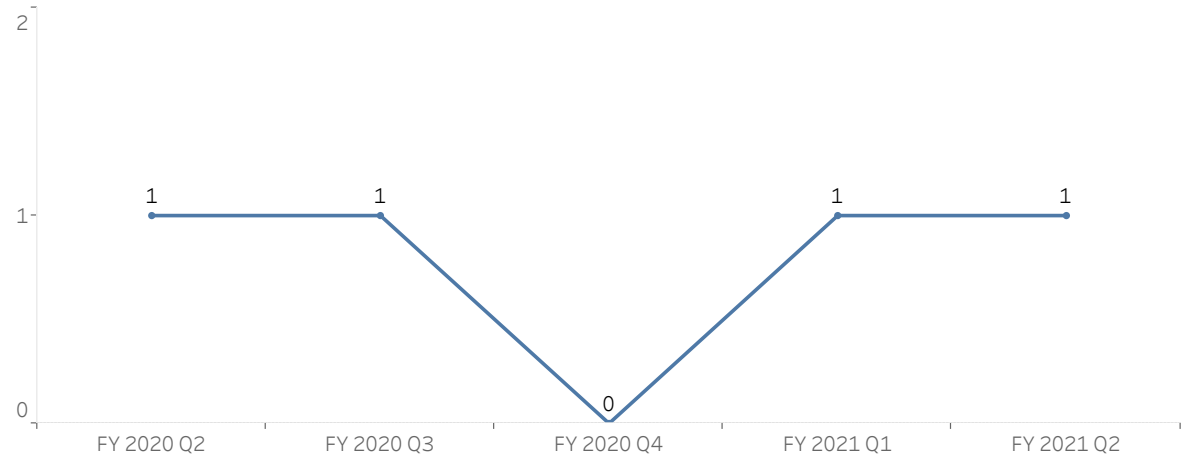
Operators should take note of the recommendations in this bulletin.

NO CHANGE
1

Inundation or inrush of any substance

Inundation and inrush are low frequency, high consequence hazards, 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 OCTOBER 2019 TO DECEMBER 2020



HIGH POTENTIAL INCIDENT – PREPARATION AND PLANNING MITIGATE INCIDENT

On 5 November 2020, heavy rain from the previous weekend resulted in the Shoalhaven River rising over the days that followed. The resulting rise in water led to an inundation of floodwater and breakage to the wall at a local quarry. The area of the quarry which the overflow occurred was Norwest of the quarry in the excavation area.

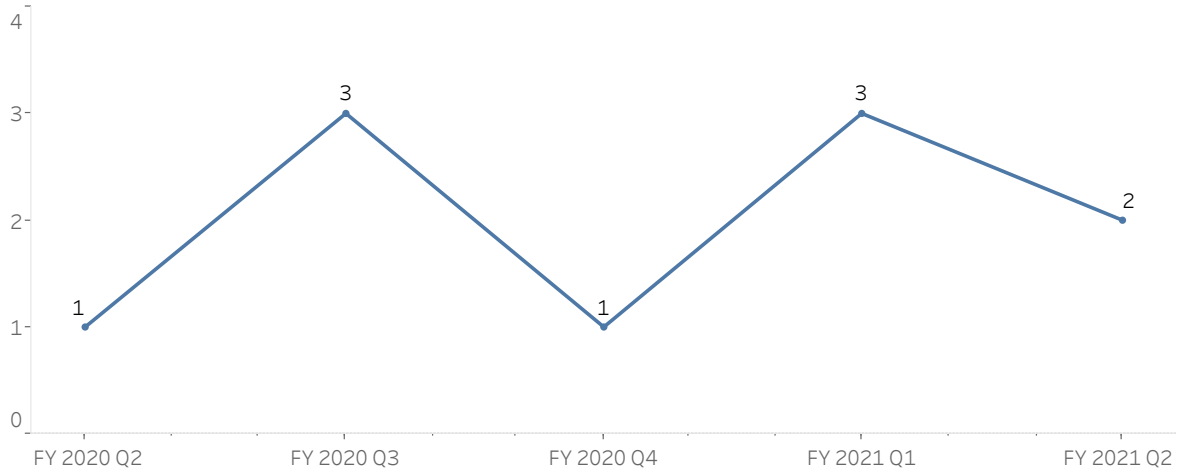
There was no pollution to the environment or damage to equipment.

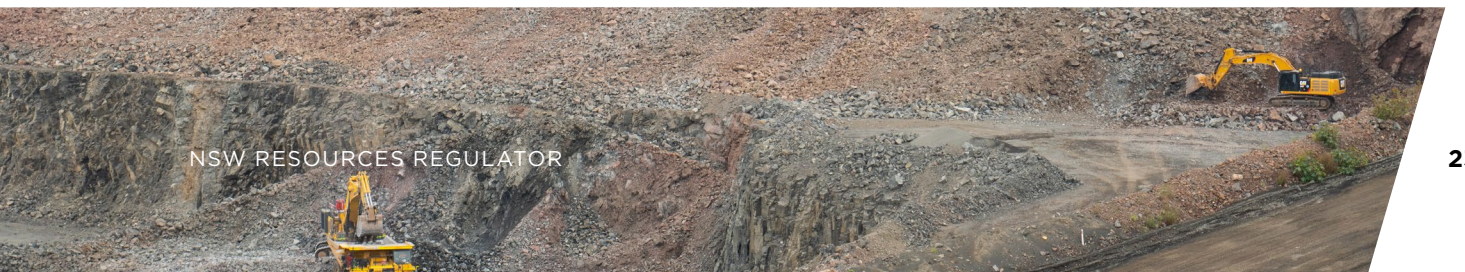
This type of event has occurred previously, and the quarry enacted flood plans, to prevent further environmental damage.

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 OCTOBER 2019 TO DECEMBER 2020





DANGEROUS INCIDENT – UNPLANNED MOVEMENT OF DRIFT WINDER

A drift winder has had an unplanned movement.

Prior to the event, the DC winder motor had been serviced. The electrician entered the man car and intended to travel down the drift (initially in slow/creep speed), however, the man car moved up the drift and at high speed. The movement was stopped automatically by the safety Programmable Logic Controller (PLC).

Comments to industry

- Mines with winders must have a principal hazard management plan for mine shafts and winding systems. The plan must address control measures for risks associated with mine shafts and winding systems (clause 3, schedule 1 WHS (MPS) Regulation).
- In developing principal hazard management plans, mines must ensure components are changed out and replaced with like components.

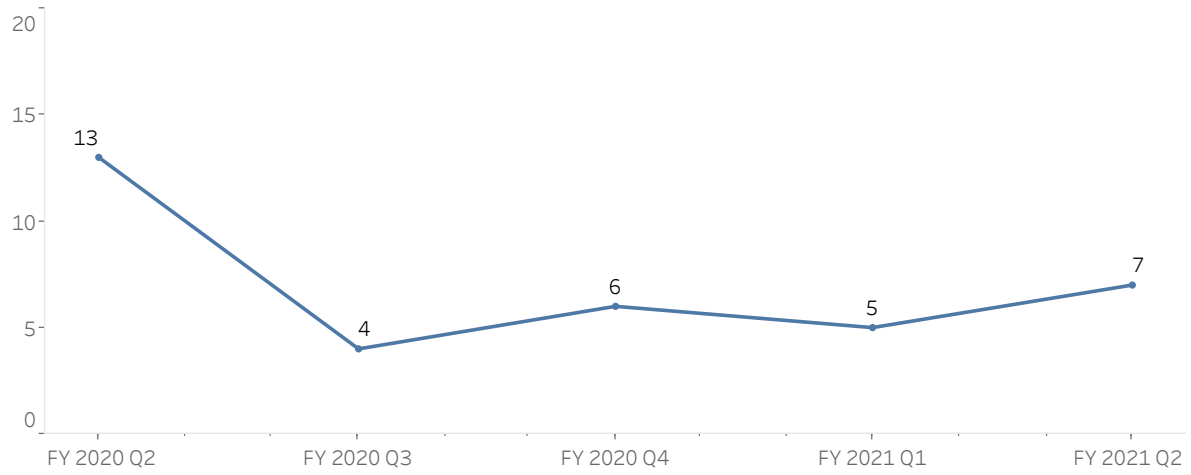
Gas outbursts

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.

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 7. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD SPONTANEOUS COMBUSTION OCTOBER 2019 TO DECEMBER 2020



HIGH POTENTIAL INCIDENT – SPONTANEOUS COMBUSTION IN TRAIN LOAD OUT AREA

During a routine inspection of stockpiles at a surface coal mine, an area of self-heating coal (spontaneous combustion) was identified in one of the stockpiles. Inspections of the stockpile on the day prior, showed no signs of self-heating.

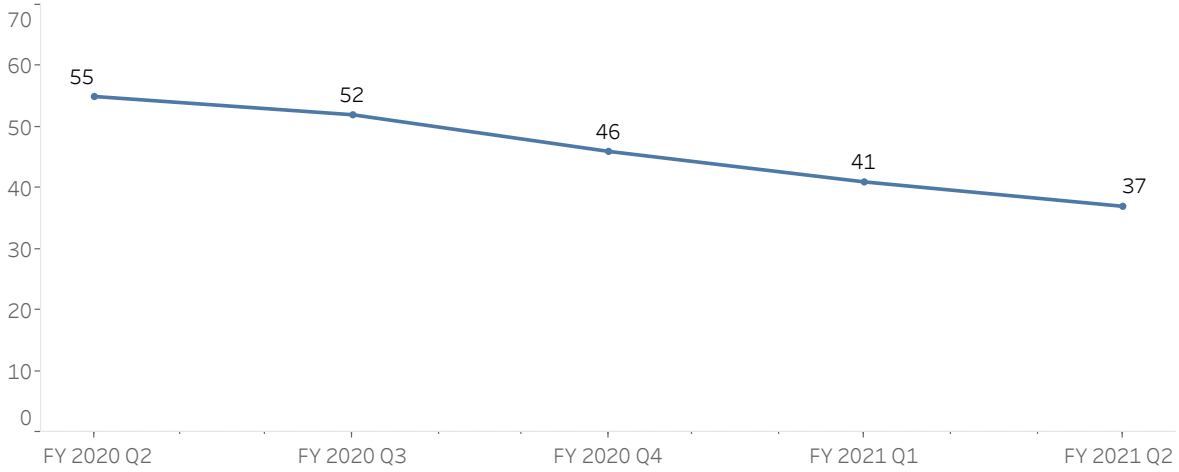
The area was managed as per site procedure. The area was segregated with demarcation, signage and lighting was set up to enable ongoing monitoring. The area was cooled, and the heated material was relocated and cooled separately.

The mine is investigating the incident.

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 8. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD ROADS OR OTHER VEHICLE OPERATING AREAS OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – NEAR MISS AT AN OPEN CUT COAL MINE

A haul truck and a light vehicle had a near miss at an open cut coal mine. The empty haul truck approached a corner where a grader was working on the inside of the curve. The haul truck moved to the wrong side of the road to pass the grader and did not see any approaching vehicles. Both operators saw each other in time to stop their vehicles and avoid a collision.

Comments to industry

- The risk of collision when vision is restricted is well documented and reasonably foreseeable. Windrows should be constructed and maintained at heights that maximise visibility for all road users and maintain the effective delineation of roadways.
- Mines should review procedures and warning systems when road maintenance is being undertaken and when part of the road has been closed.
- When visibility is restricted, vehicle operators should only proceed when they are satisfied the roadway is clear.

DANGEROUS INCIDENT – LIGHT VEHICLE OCCUPANTS AVOID INJURY IN HEAVY COLLISION

While tramming with a loaded bucket from the stockpile to the crusher, a loader collided with the driver's side of a light vehicle. The vehicle was moved sideways with such force that the passenger side tyres were pushed off the wheel rims. The driver and passenger were fortunate to escape injury.

Comments to industry

- Lack of positive communication has been the root cause of many incidents, including fatalities. Mine operators must consider higher-order controls including proximity detection.
- Effective protocols and procedures should be in place to ensure that positive communication between all operators is achieved. Supervisors must monitor the correct use of these protocols on a continual basis.

Refer to Safety Bulletin 18-06 Lack of positive communications.

DANGEROUS INCIDENT – DISTRACTION MAY HAVE CAUSED COLLISION

A light vehicle being driven by a contractor collided with a barrier on the edge of a mine access road. The barrier intruded into the front passenger side of the vehicle. Statements indicate that the driver may have been distracted by a kangaroo.

Comments to industry

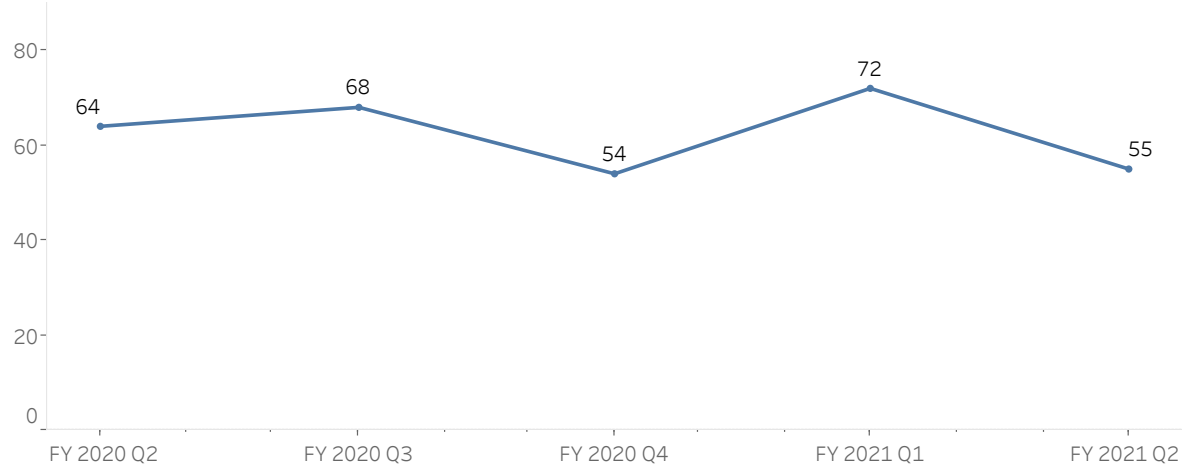
- Mine operators should ensure light vehicle operators are aware of the hazards in relation to local wildlife.
- In addition, mine operators should also ensure that light vehicles are fitted with safety features that provide protection if a crash occurs. Features include crumple zones, airbags, seat belts and active safety assist technologies.

FROM 72
55

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 9. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD FIRE OR EXPLOSION OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – PART FAILURE LEADS TO LEAK, WHICH IN TURN, CAUSES FIRE

While driving to the surface park up area, approximately 100 metres from the portal, a haul truck's engine caught on fire. The haul truck operator saw the flame coming from the exhaust guard. The fire suppression system initiated, which extinguished the flame.

Comments to industry

- The mine identified that the 'O' ring failed, resulting in the spray of hydraulic oil onto the hot engine components.
- The Resources Regulator has identified a concerning increase in reports of fire on mobile plants. Escape of fluids ignited by hot surfaces has been identified as one of the top two causes, along with electrical wiring faults.

For further information and the Regulator's position refer to our website.

DANGEROUS INCIDENT – SELF-RESCUE EQUIPMENT CATCHES FIRE

An operator activated a self-contained self-rescue (SCSR) unit that was near the end of its life, as part of a training exercise. The operator pulled the pin on the SCSR unit to activate the oxygen and the unit ignited. The operator removed the unit from their neck and dropped it to the ground, where it caught on fire. The fire was extinguished, and the operator was not injured.

Comments to industry

- The cause of this fire has not yet been established. The unit has been sent to the OEM for further testing and analysis.
- Mine operators should maintain regular frequent testing of self-rescue units. When excessive failures occur, the entire batch of self-rescuers should be removed from service.
- The outcomes of this incident need to be considered when using self-rescuers for training exercises.

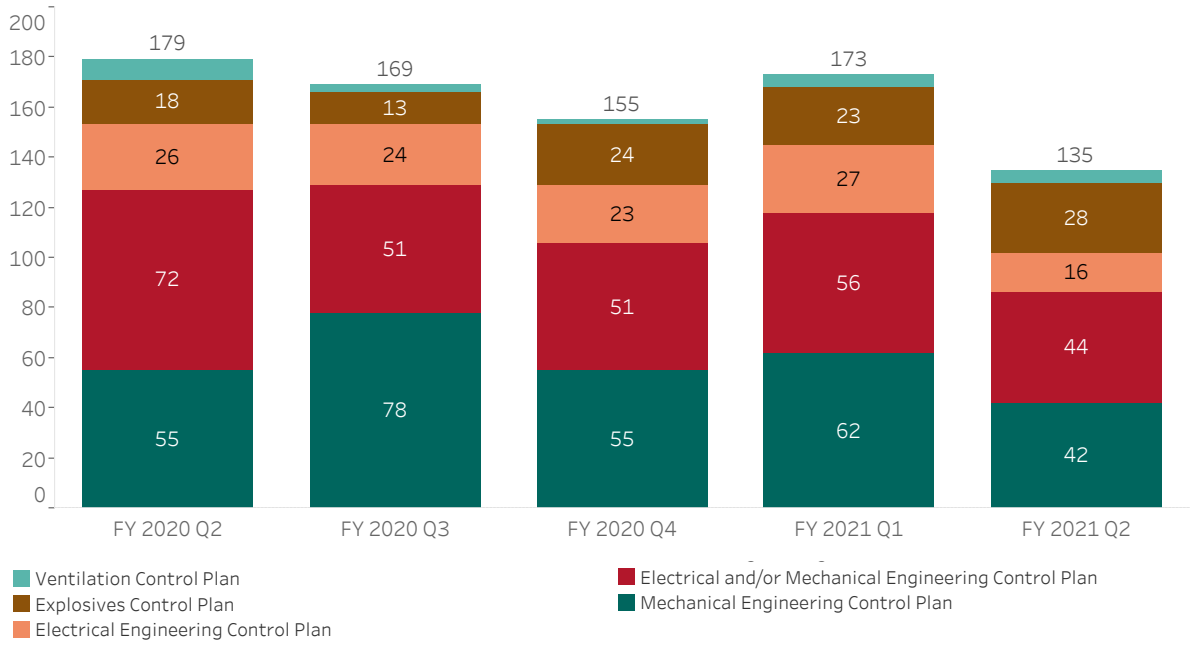
Principal control plans

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 10. INCIDENT NOTIFICATIONS RECEIVED BY PRINCIPAL CONTROL PLAN OCTOBER 2019 TO DECEMBER 2020

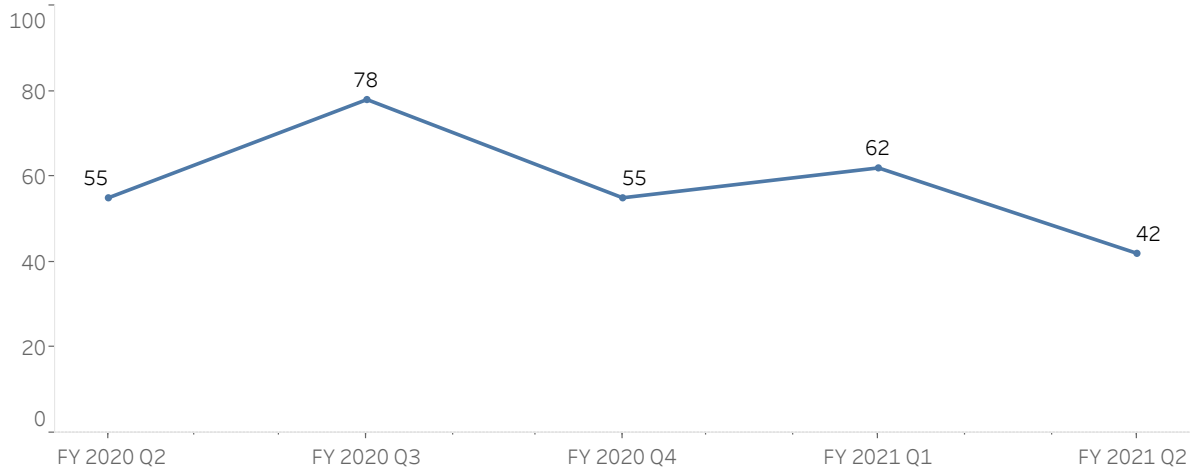


FROM 62
42

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 11. INCIDENT NOTIFICATIONS RELATED TO THE MECHANICAL ENGINEERING CONTROL PLAN OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – POOR COMMUNICATION AND PROCEDURE LEADS TO FAILED LIFT

Workers at a surface coal mine were using a crane to lift and lower light poles from their foundations. After attaching a chain to the bottom of a pole, a worker was to use an elevated work platform to attach a sling mid-way up the pole before lifting. However, before this happened, the crane operator tensioned the chain, causing the pole to lift from its foundation and topple over. No persons were injured.

Comments to industry

- Light poles should remain bolted in place until all slings and lifting equipment are in position so that the pole cannot fall when bolts are removed.
- Mine operators should have documented procedures for the task. Supervisors and workers should ensure that the procedures are followed throughout the duration of the task.
- It is vital that all parties actively involved in the task clearly communicate their intentions to others.
- No-go zones should be delineated and clearly communicated to all workers in the vicinity.

DANGEROUS INCIDENT – PULLEY FALLS NEAR WORKER

While removing a drift winder rope, the head sheave plumber blocks failed, resulting in the head sheave falling to ground level from its position on the gantry, a vertical distance of approximately 15 metres. The sheave wheel fell into a demarcated no-go zone. A person was positioned in the line of fire when the pulley fell but was not injured.

An initial investigation indicates that the method of rope removal, using the mobile friction winder, inducted a horizontal load on the plumber blocks. This resulted in the plumber block feet failing and the head sheave working free.

Comments to industry

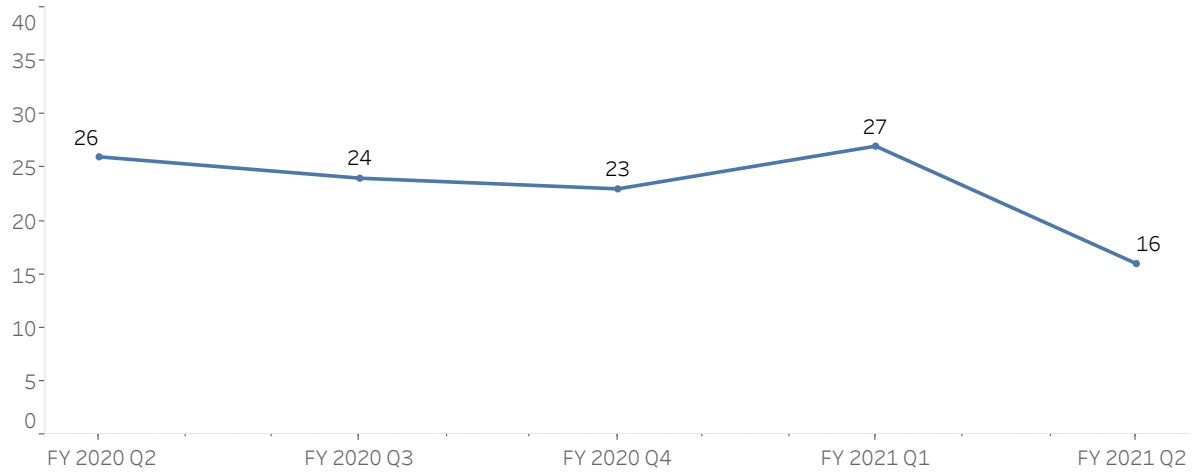
- Safe systems of work must be documented and provided by mine operators. Supervisors must ensure that the systems of work are understood and implemented by workers.
- Engineering design and expected forces must be calculated for all parts of the task to ensure equipment is designed for the expected duty.
- The risk of falling objects and the positioning of workers must be considered in the work methods.
- Established no-go zones must be adequately sized to ensure workers are not put at risk from falling objects.

FROM 27
16

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 12. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL ENGINEERING CONTROL PLAN OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – PLUMBER FEELS SLIGHT SHOCK

A plumber working in the bathroom /change area at an underground gold mine, felt a slight tingle when he touched a cable to a float switch in a septic tank. He was taken to hospital, where he was assessed, cleared and released.

The circuit breaker to the float was immediately turned off and isolated. The float switch cable was removed from service.

An investigation was conducted, and it appears that water ingress into the 240v AC float cable and the damp environment may have resulted in the energy tingle felt by the worker.

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.

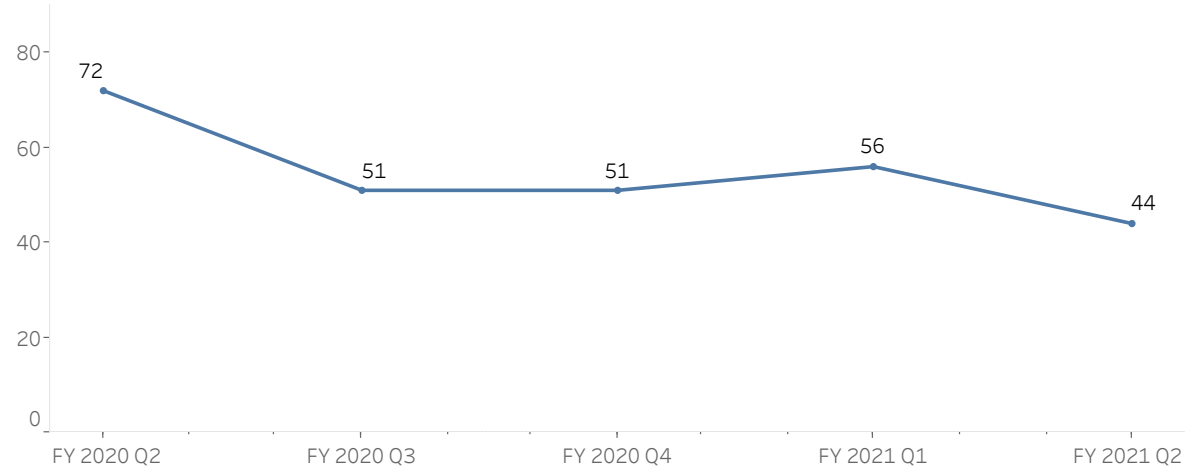
Review the investigation report into a previous electrical fatality for further information.

FROM 56
44

Electrical and mechanical engineering control plans

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

FIGURE 13. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL AND/OR MECHANICAL CONTROL PLAN OCTOBER 2019 TO DECEMBER 2020

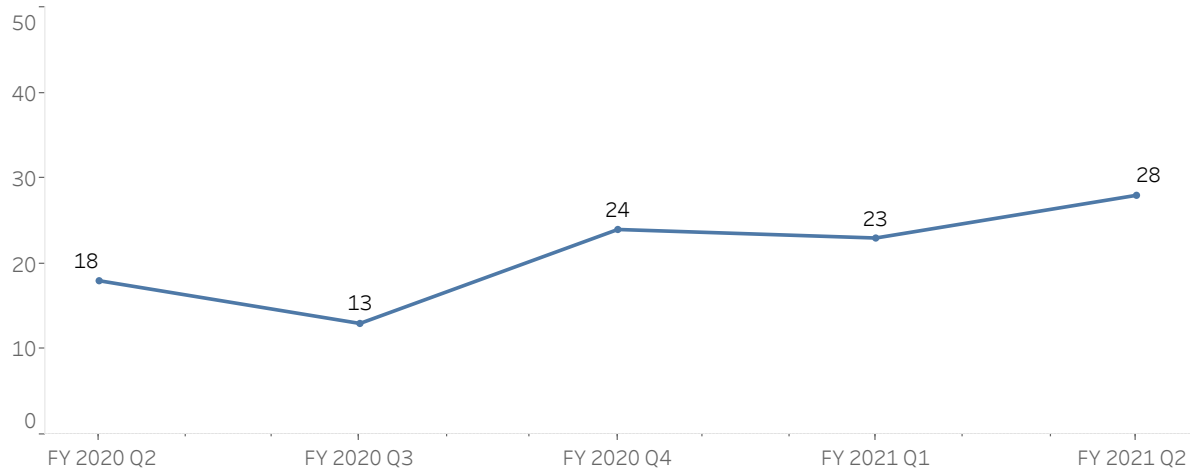


Explosives control plan

28
FROM 23

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 14. INCIDENT NOTIFICATIONS RELATED TO THE EXPLOSIVES CONTROL PLAN OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – FLY ROCK LANDS NEAR VEHICLE

In late December 2020, a surface coal mine was conducting a blast in pit, when a piece of fly rock landed adjacent to sentry two position.

A sentry cone was positioned approximately 510.6m from the blast, and a piece of rock flew 511m (from the blast), landing about 5m from the sentry vehicle. This was the only piece of fly rock observed and it was fist sized (or slightly larger) and weighed approximately 2kg.

An apparent cause of the incident may have been an overloaded hole. The scene was preserved and an investigation into the incident has commenced.

Fly rock incidents can be very dangerous, and a recent incident gained national coverage. The Regulator made a animated re-creation of that incident (video), in which multiple persons were put at serious risks to their health and safety as they watched a blast from around 275m.

EXPLOSIVES GO MISSING

A local quarry completed a blast on the 20 October 2020 and conducted a stocktake of explosives the next day. At the time of the stocktake, one Pentex GL Booster could not be accounted for. The missing explosives were reported to the regulator and to Police.

The quarry has conducted a search without discovery of the booster and now considers the booster may have been consumed in the shot.

Recommendations include

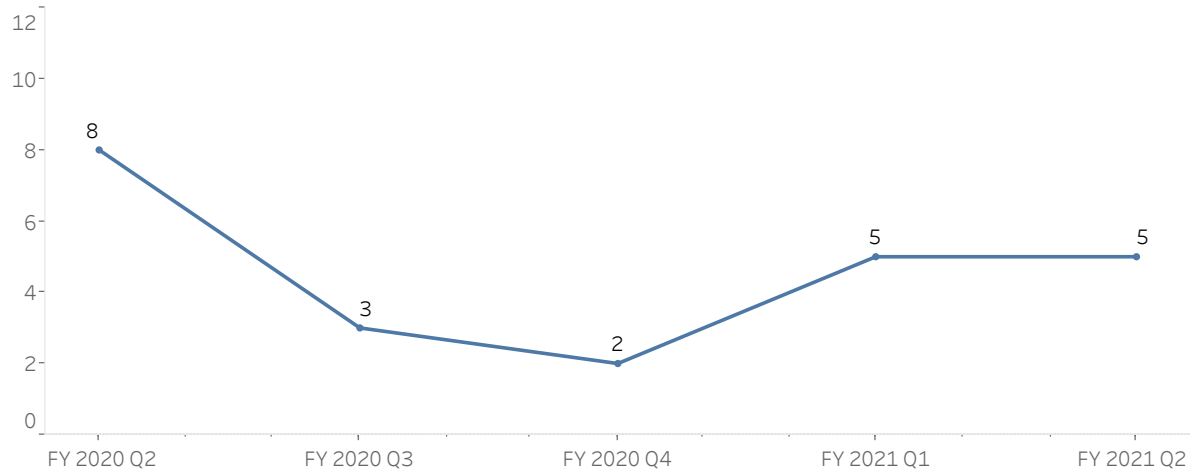
- Ensuring that the explosives control plan sets out control measures for risks to health and safety associated with explosives considers the potential for theft of misuse
- Ensuring that the explosives control plan sets out procedures for the accounting of explosives at the mine site.
- Ensuring that 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*.

NO CHANGE
5

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 15. INCIDENT NOTIFICATIONS RELATED TO VENTILATION CONTROL PLANS OCTOBER 2019 TO DECEMBER 2020



DANGEROUS INCIDENT – POWER SUPPLY OUTS MAIN VENTILATION FAN

An underground metal mine reported that the main ventilation fan had stopped, due to a supplier power outage.

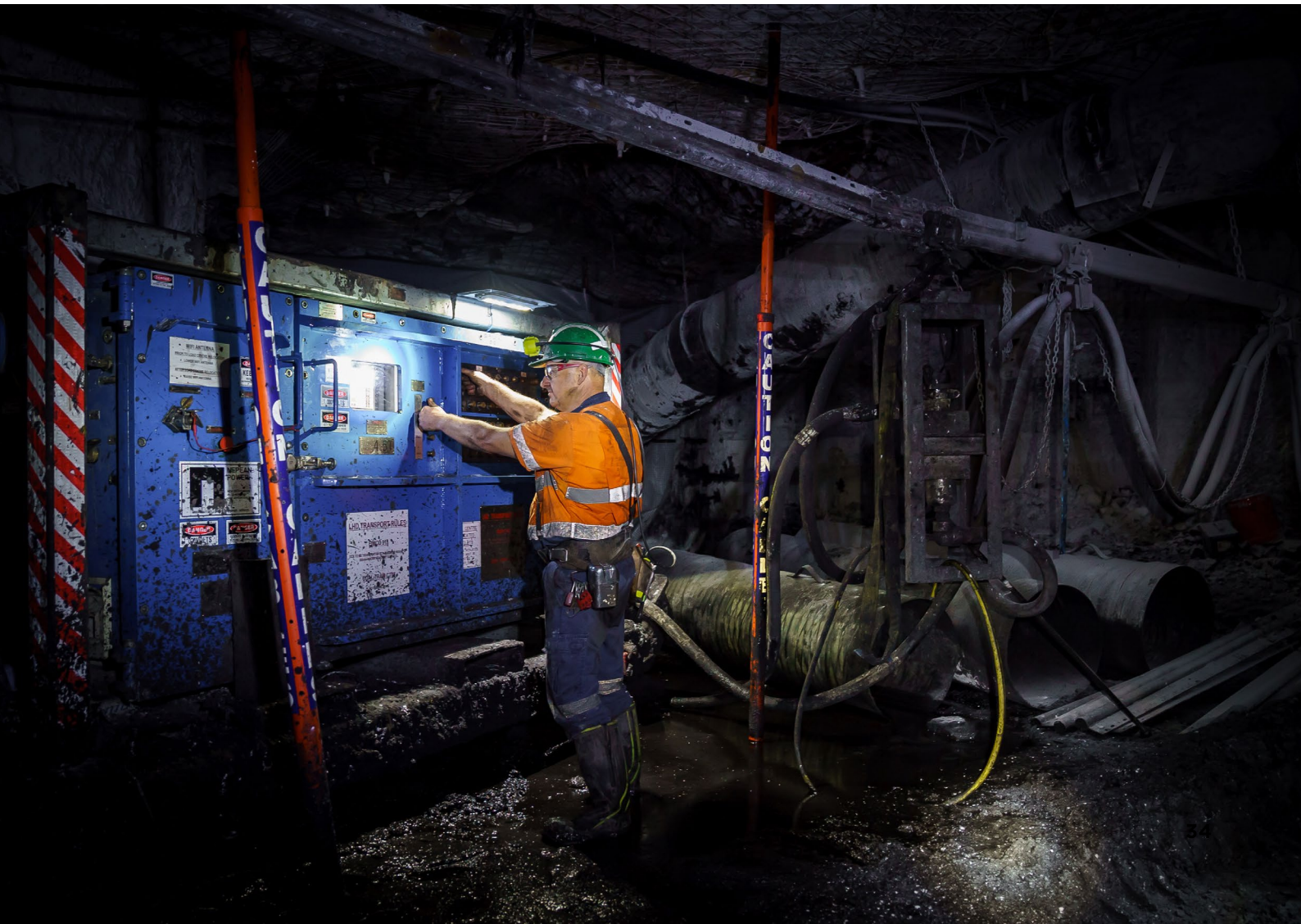
The issue was communicated immediately across the site and inspections of the mine's high voltage infrastructure begun. No issues were found.

In communications with the power supply authority, the mine was made aware of an external cause for the outage. They were told that a foreign object contacted an offsite pole cross arm, resulting in a phase fault. This in turn, resulted in the main power supply to the mine also tripping.

Good communications internally and externally, quickly identified the issue and ensured that the was mine was able to prevent risks to workers associated with a loss of ventilation.

Recommendations include

- 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
A collaboration in safety

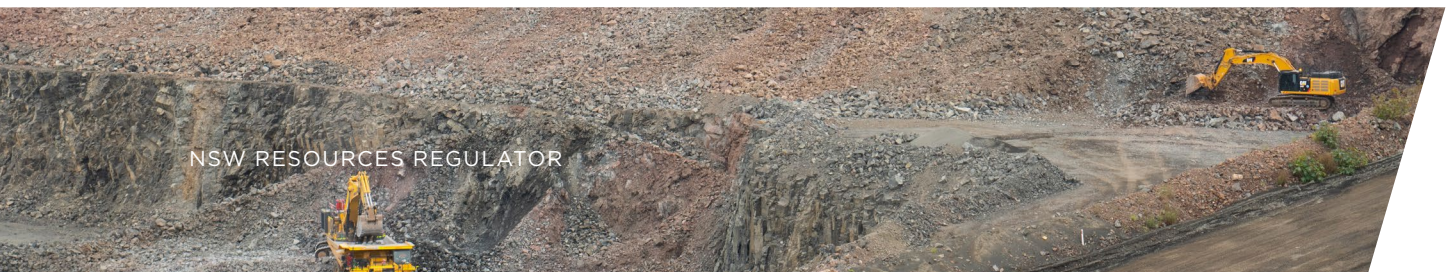
Following a massive ammonium nitrate explosion in Beirut during August 2020, the NSW Resources Regulator began a state-wide inspection program at mines known to store significant quantities of ammonium nitrate product.

This inspection program generated a great deal of productive discussion, between the regulator and industry. This engagement was also recognised as an opportunity to highlight some of the specific emergency planning requirements, and more broadly, how these requirements relate to the overall mine emergency plans and consultation requirements with emergency services.

In one such example and following an inspection conducted during September 2020 by the Regulator, a Hunter Valley mine used the Regulator's mine emergency plan summary template to provide information about the mine and ammonium nitrate stored at the site to their local emergency services and local emergency management committee (LEMC).

Upon reviewing the information supplied by the mine during the November LEMC meeting, various emergency services and agencies from the committee arranged to do a site familiarisation at the mine, with the assistance of the Regulator's Emergency Planning team.

As a collaborative effort, the NSW Resources Regulator, NSW Police Force, Fire Rescue NSW, NSW Rural Fire Service, Local Council and NSW Ambulance Service attended the mine during December 2020, giving those agencies invaluable opportunities to better understand and prepare for their local emergency planning issues and directly engage with the mine site regarding their specific roles and requirements.



Sector profiles

NSW Resources Regulator

SECTOR REPORTING

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

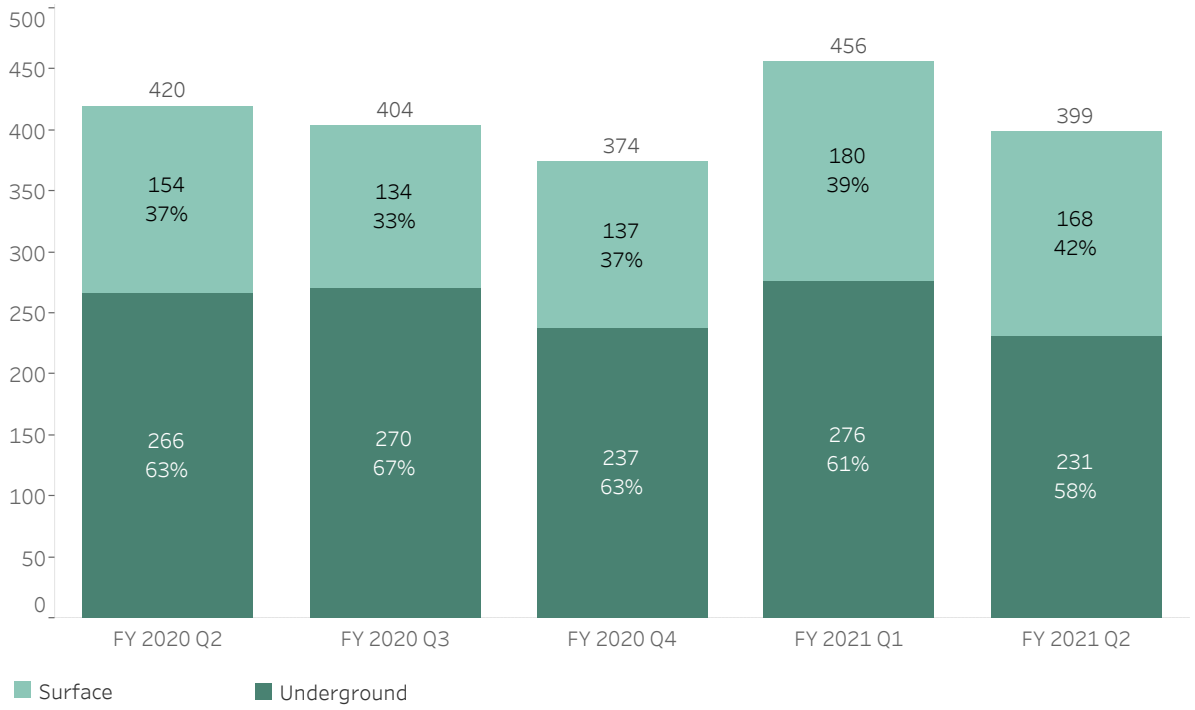
Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector-specific reporting trends.

TABLE 2. COAL SECTOR INCIDENT NOTIFICATION RECEIVED RATES OCTOBER 2019 TO DECEMBER 2020

MEASURE	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	FY 2021 Q2	AVERAGE
Incidents	420	404	374	456	399	411
Active mines	128	127	122	118	117	122
Incident rate per active mine	3.28	3.18	3.07	3.86	3.41	3.36
Mines that notified incidents	55	61	49	57	54	55
% of mines notifying an incident	43%	48%	40%	48%	46%	45%
Incident rate per notifying mine	7.64	6.62	7.63	8.00	7.39	7.46

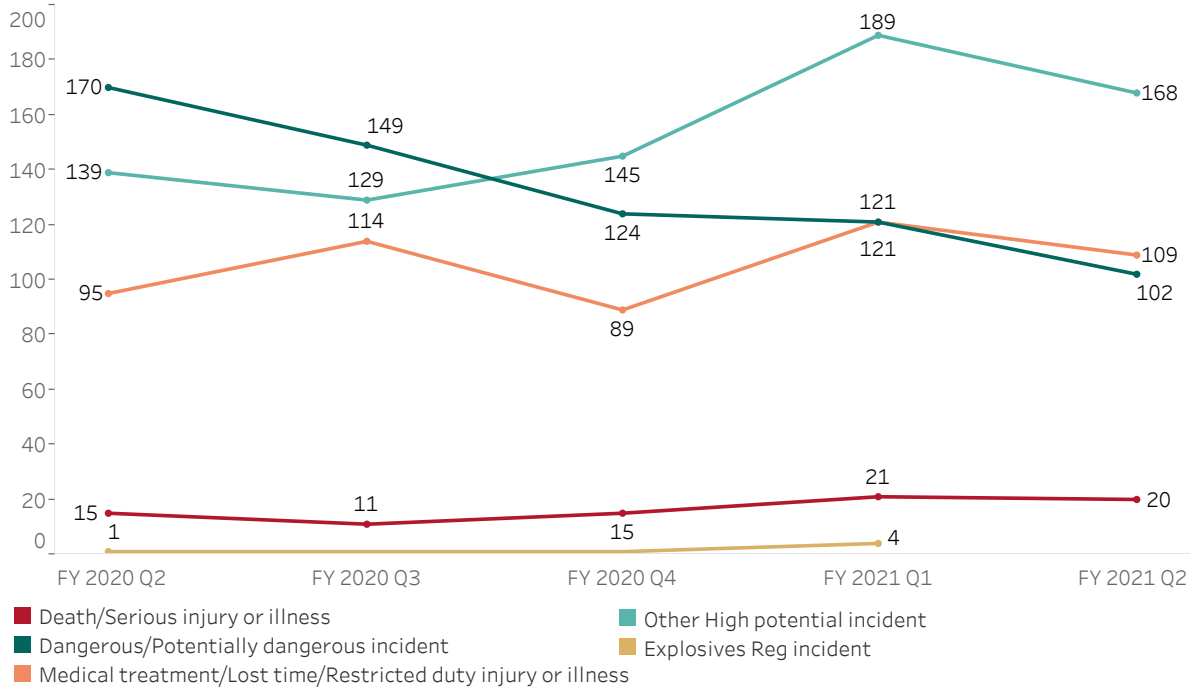
The following graph shows the proportion of safety incident notifications received from surface and underground coal operations. This quarter there was a decrease in the number of incidents notified across both underground and surface coal operations.

FIGURE 16. COAL SECTOR INCIDENT NOTIFICATIONS BY OPERATION TYPE OCTOBER 2019 TO DECEMBER 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. This quarter saw a decreasing number of dangerous/potentially dangerous serious injury or illness, medical treatment/lost time/restricted duty injury or illness and other high potential incidents notified by the sector.

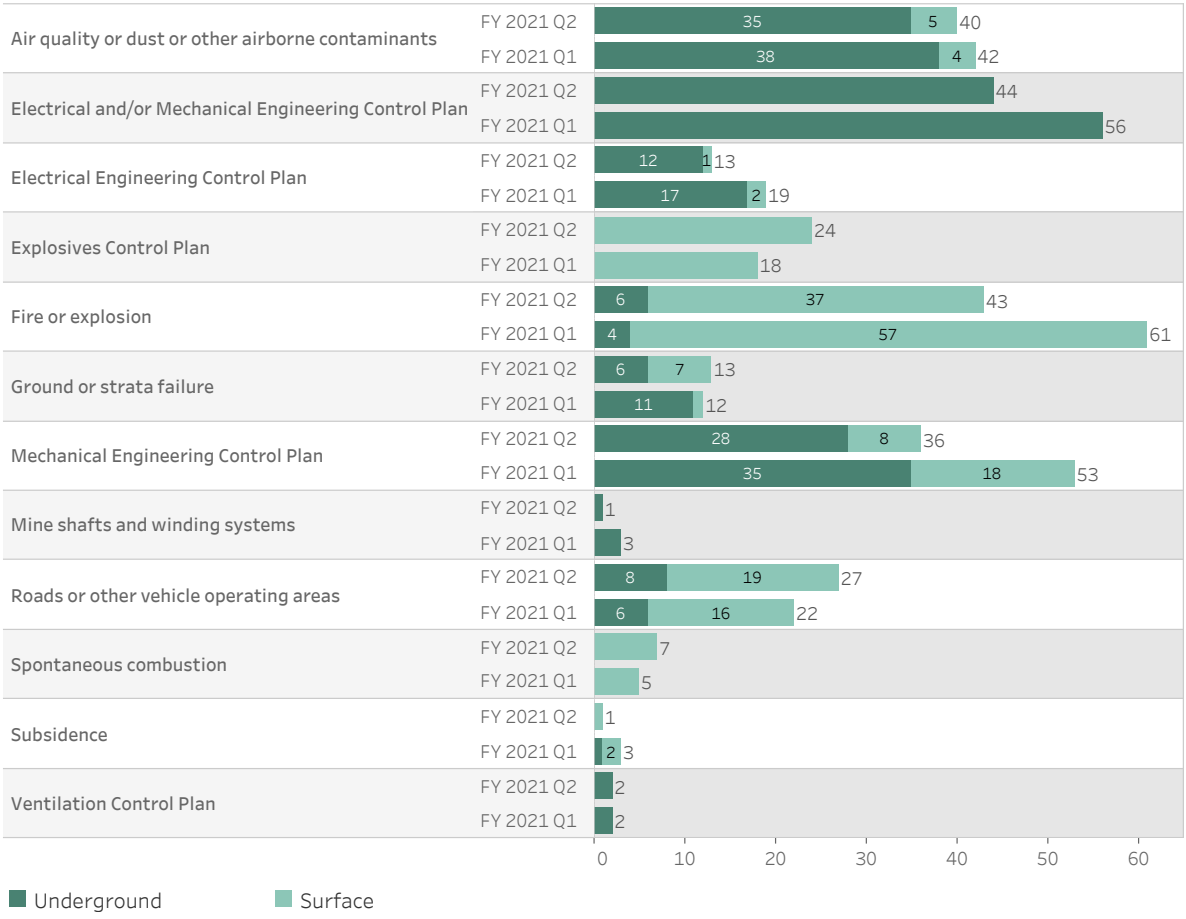
FIGURE 17. COAL SECTOR INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT OCTOBER 2019 TO DECEMBER 2020



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 18. COAL MINE INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE JULY TO DECEMBER 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 OCTOBER 2019 TO DECEMBER 2020

MEASURE	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	FY 2021 Q2	AVERAGE
Incidents	93	86	80	95	93	89.4
Active mines	38	39	39	40	40	39
Incident rate per active mine	2.45	2.21	2.05	2.38	2.33	2.28
Mines that notified incidents	25	25	25	29	23	25
% of mines notifying an incident	66%	64%	64%	73%	58%	65%
Incident rate per notifying mine	3.72	3.44	3.20	3.28	4.04	3.54

The following graph shows the proportion of safety incident notifications received from large mines and quarries by operation types.

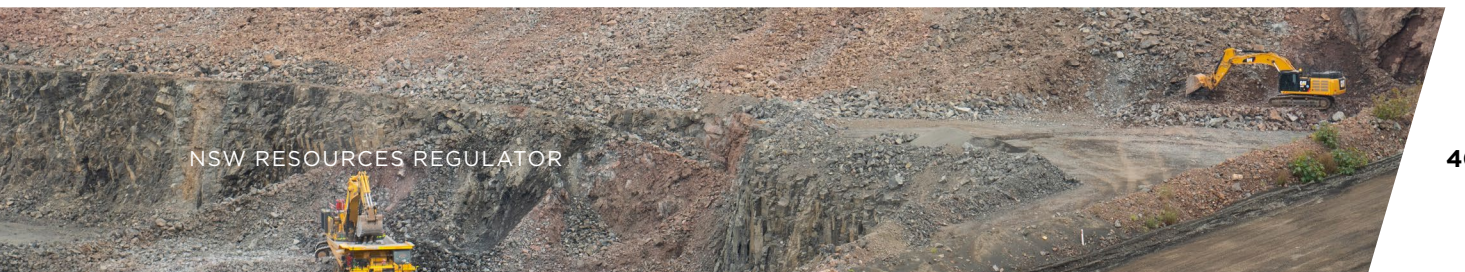
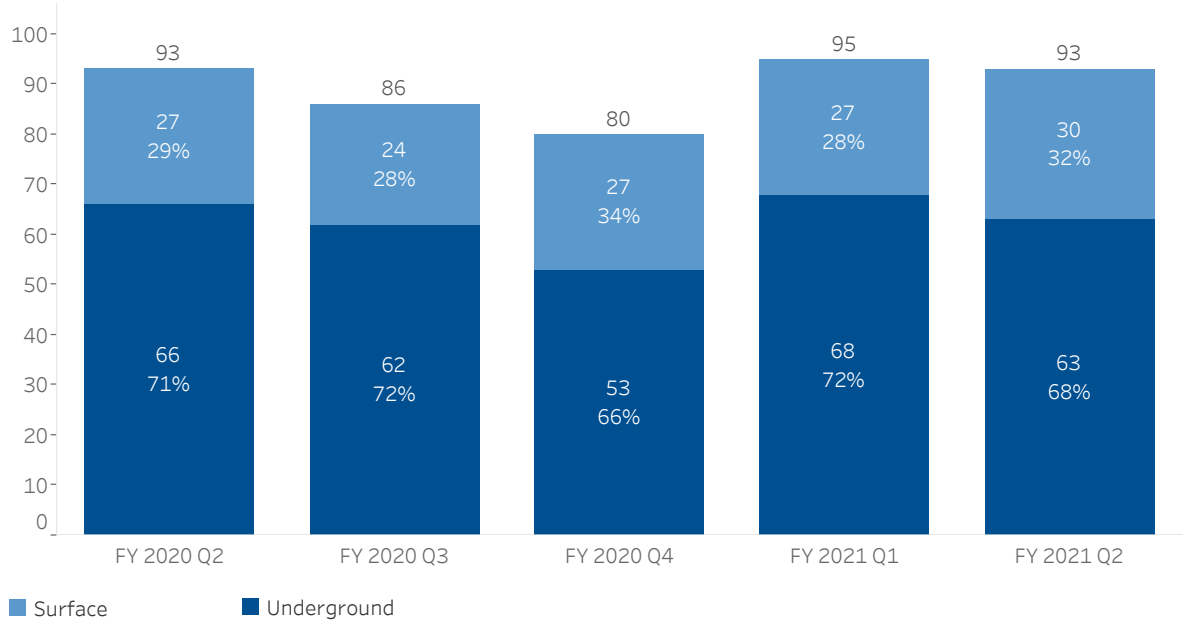
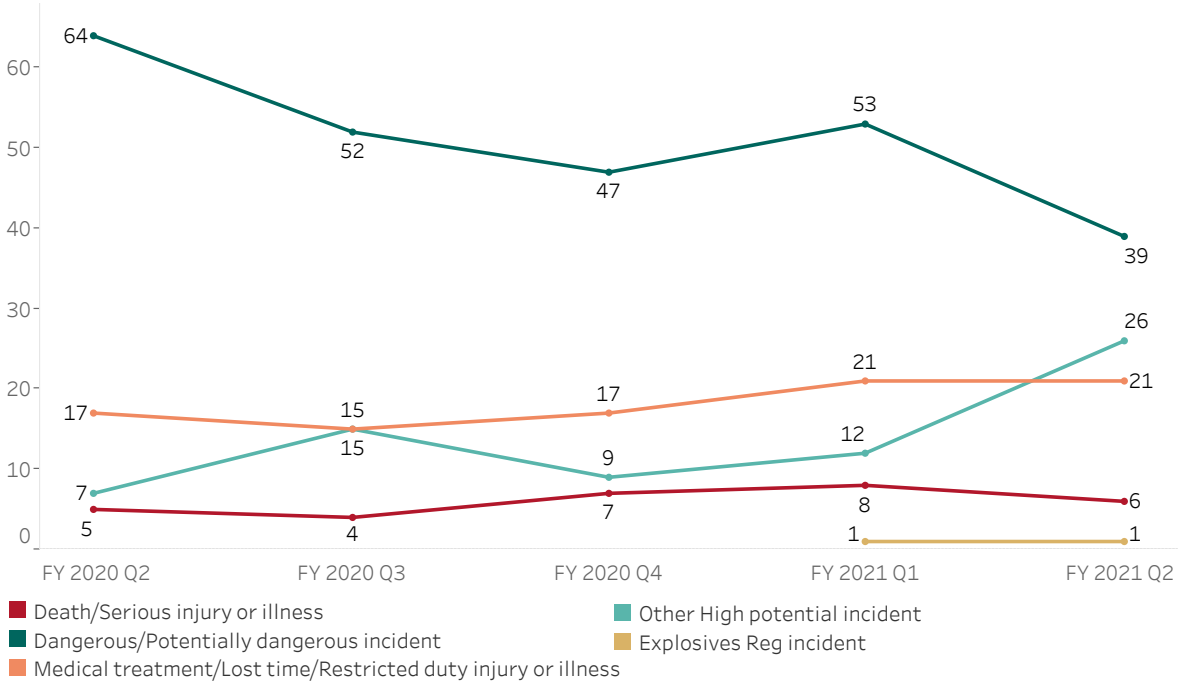


FIGURE 19. LARGE MINES AND QUARRIES INCIDENT NOTIFICATIONS BY OPERATION TYPE OCTOBER 2019 TO DECEMBER 2020



The following graph presents a breakdown of safety incidents notified to the NSW Resources Regulator by the large mines and quarries sector, based on the requirement to report under the safety legislation. This quarter saw and observed increase in the number of 'other high potential' incidents compared to last quarter. Exceedances of the airborne contaminants and dust exposure standards associated with increased monitoring by mining operators has contributed to the increase in other high potential notifications. This increase highlights the need for mine operators to ensure their risk management controls associated with airborne contaminants remain fully effective. More information can be found on our website.

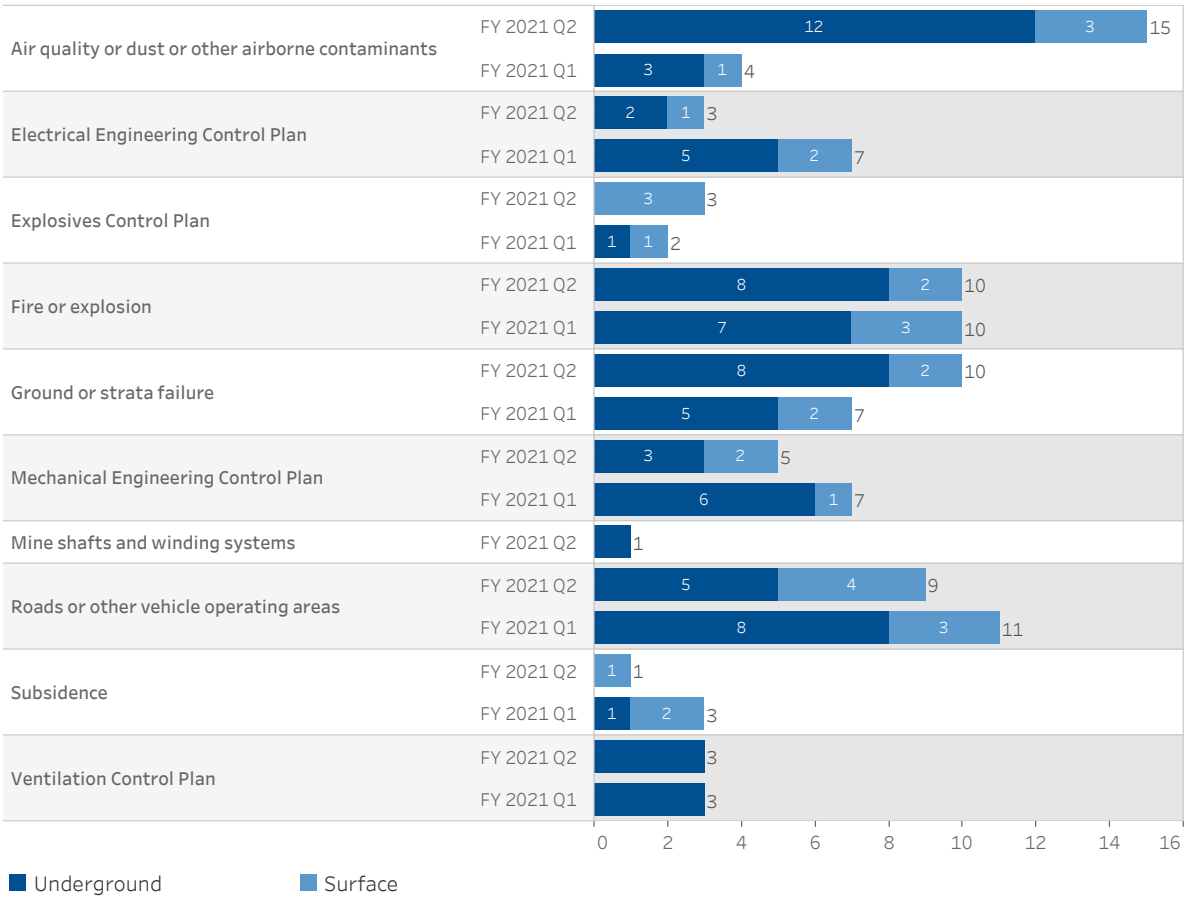
FIGURE 20. LARGE MINES AND QUARRIES INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT OCTOBER 2019 TO DECEMBER 2020



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 underground mine operators need to ensure their risk management controls remain fully effective. This includes controls for managing hazards associated with airborne contaminants and dust including controls for managing atmospheric crystalline silica.

FIGURE 21. LARGE MINES AND QUARRIES INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE JULY 2020 TO DECEMBER 2020



Small mines sector

Incident notifications

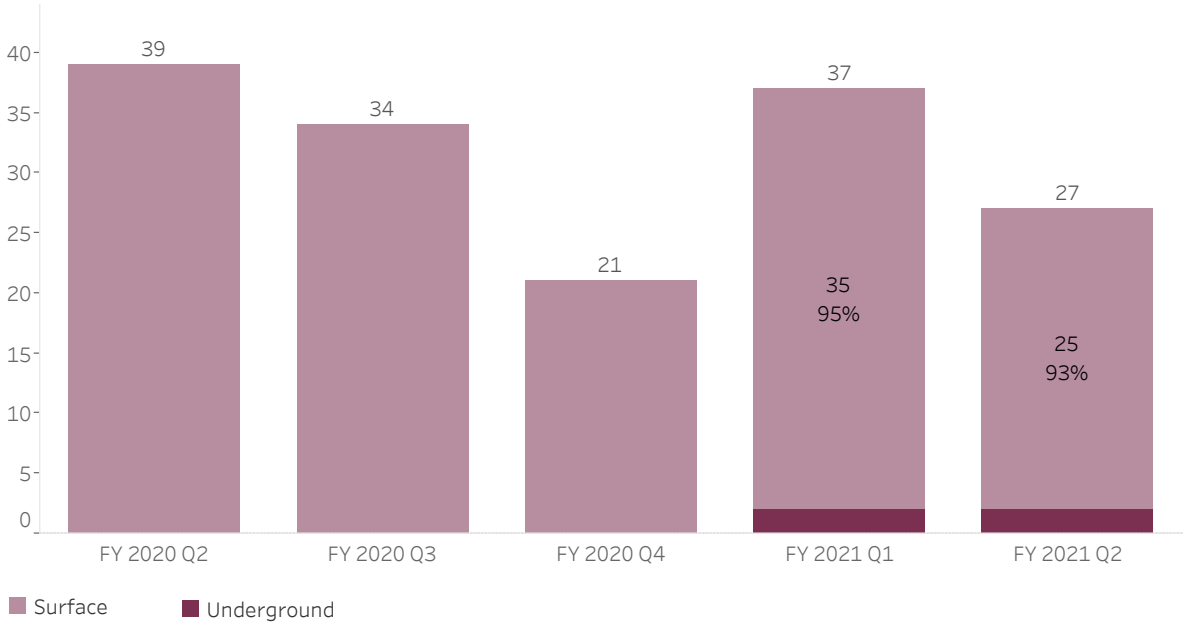
Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends.

TABLE 4. SMALL MINES AND QUARRIES SECTOR INCIDENT NOTIFICATIONS RECEIVED RATES OCTOBER 2019 TO DECEMBER 2020

MEASURE	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	FY 2021 Q2	AVERAGE
Incidents	39	34	21	37	27	32
Active mines	2,695	2,683	2,671	2,658	2,654	2,672
Incident rate per active mine	0.01	0.01	0.01	0.01	0.01	0.01
Mines that notified incidents	34	26	19	33	23	27
% of mines notifying an incident	1.26%	0.97%	0.71%	1.24%	0.87%	1.01%
Incident rate per notifying mine	1.15	1.31	1.11	1.12	1.17	1.17

The graph below shows the proportion of safety incident notifications received from small mines and quarries.

FIGURE 22. SMALL MINES AND QUARRIES INCIDENT NOTIFICATIONS BY OPERATION TYPE OCTOBER 2019 TO DECEMBER 2020



The following graph presents a breakdown of safety incidents notified to the NSW Resources Regulator by the small mines sector by the requirement to report. For this quarter increasing numbers of other high potential incidents 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.

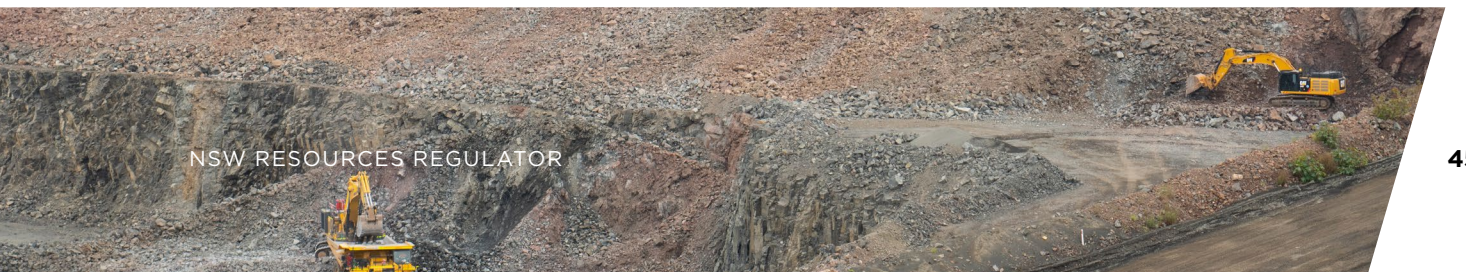
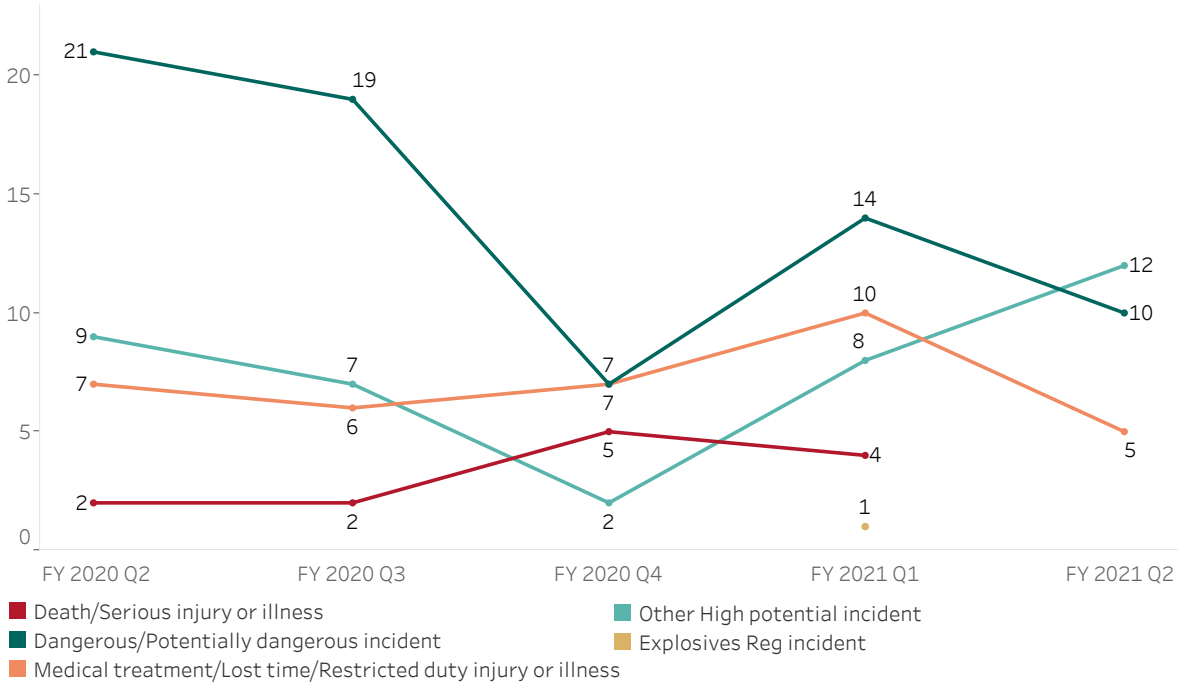


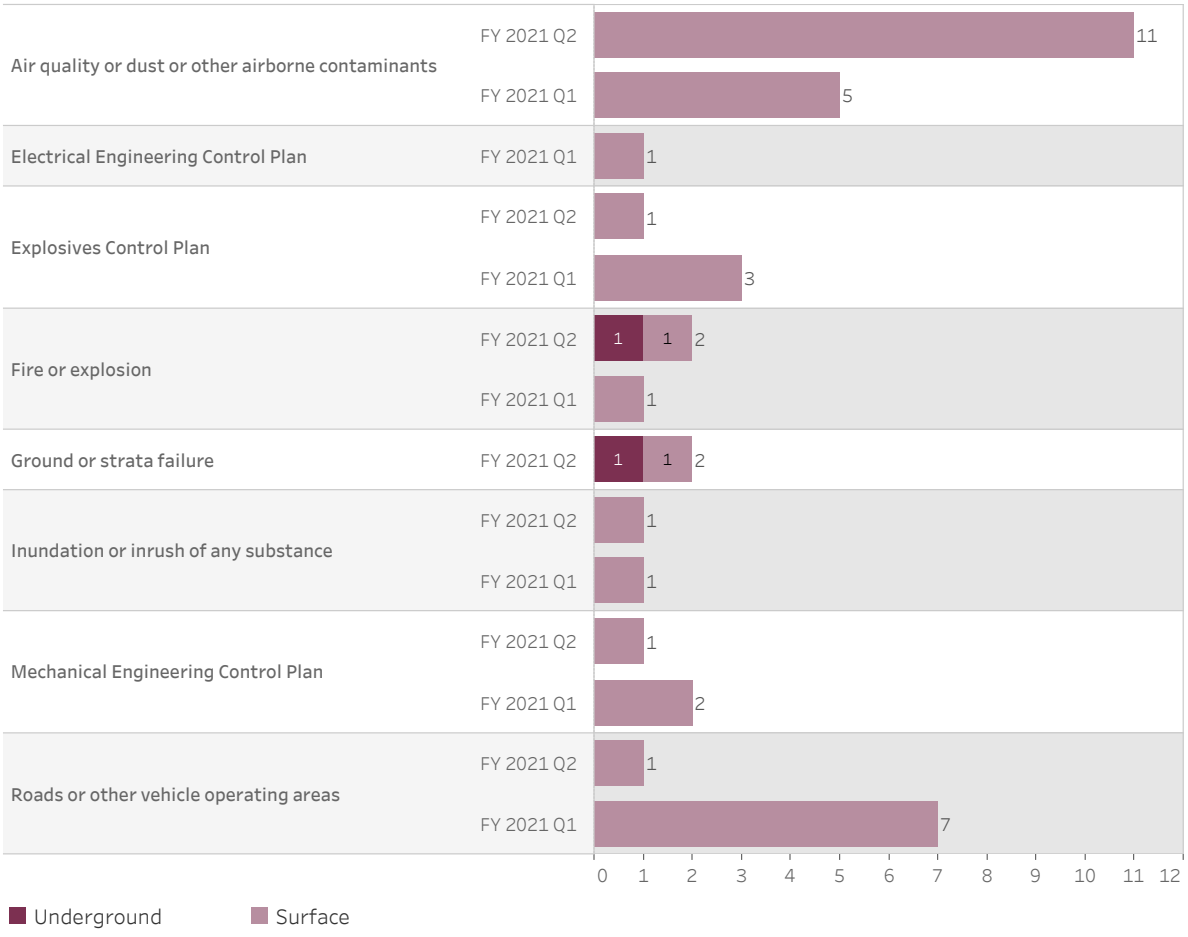
FIGURE 23. SMALL MINES AND QUARRIES INCIDENT NOTIFICATIONS RECEIVED BY REQUIREMENT TO REPORT OCTOBER 2019 TO DECEMBER 2020



Incident notifications by principal hazard

The figure below shows the number of incident notifications received from the small mines 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 hazards associated with airborne contaminants /dust, roads or other vehicle operating areas and ground or strata failure.

FIGURE 24. SMALL MINES AND QUARRIES INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE JULY 2020 TO DECEMBER 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. The tables below show the number and 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 OCTOBER 2019 TO DECEMBER 2020

	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	FY 2021 Q2
Petroleum and geothermal sites*	0	0	0	0	0
Opal mines	0	0	0	0	1
Explorations sites**	2	2	5	3	0

* includes exploration
** excludes petroleum and geothermal

TABLE 6. EXPLORATION SITES INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT OCTOBER 2019 TO DECEMBER 2020

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

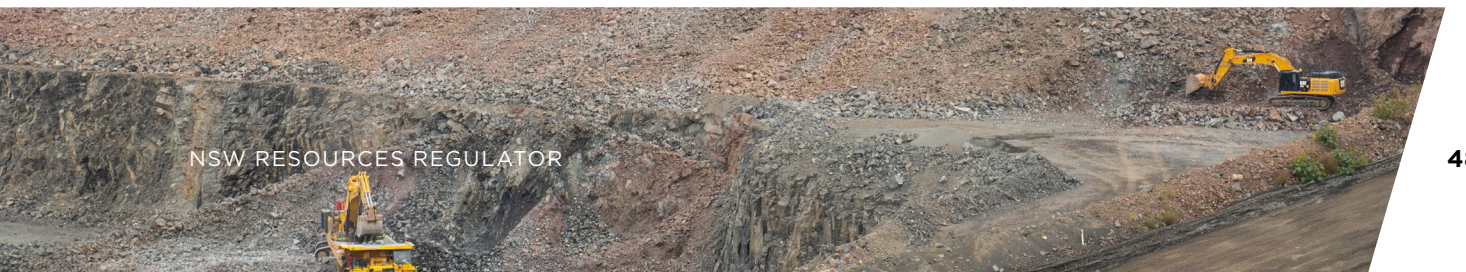


TABLE 7. EXPLORATION SITE INCIDENT NOTIFICATION BY PRINCIPAL HAZARD OCTOBER 2019 TO DECEMBER 2020

INCIDENT CLASSIFICATION BY PRINCIPAL HAZARD OR PRINCIPAL CONTROL PLAN		FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	FY 2021 Q1	FY 2021 Q2	TOTAL
Principal hazard	Fire or explosion	0	1	1	0	0	2
	Roads or other vehicle operating areas	0	0	0	1	0	1
	TOTAL	0	0	1	1	1	3
Principal control plan	Mechanical engineering control plan	0	0	1	0	0	1
Not applicable	Not applicable	2	1	3	2	0	8
TOTAL		**2**	**2**	**5**	**3**	**0**	**12**

Compliance and enforcement

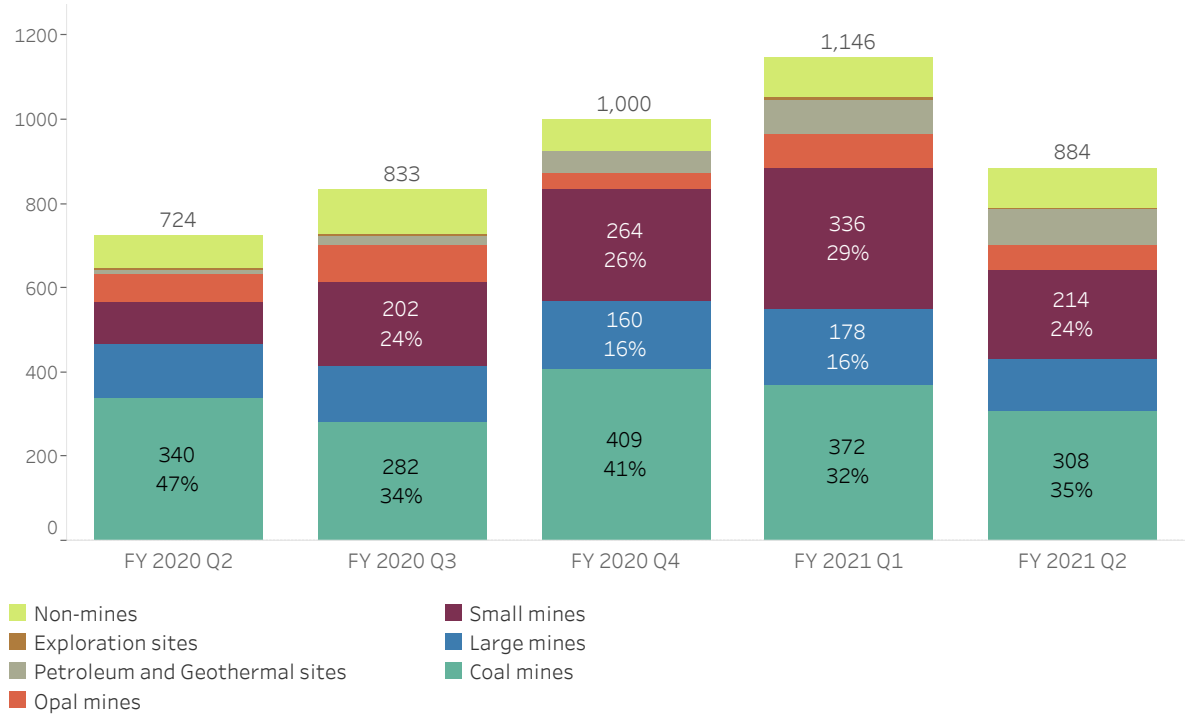
The Regulator uses a range of tools to promote and secure compliance in mines and petroleum sites in relation to work health and safety legislation. These include desktop assessments, site inspections, investigations and enforcement actions, such as issuing notices and commencing prosecutions.

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

This quarter saw a decrease in the number of assessments across all sectors. The previously observed quarter-on-quarter increase in the number of assessments in the small mines sector, was driven by multiple assessments being undertaken during a single inspection.

FIGURE 25. SAFETY ASSESSMENTS BY SECTOR OCTOBER 2019 TO DECEMBER 2020



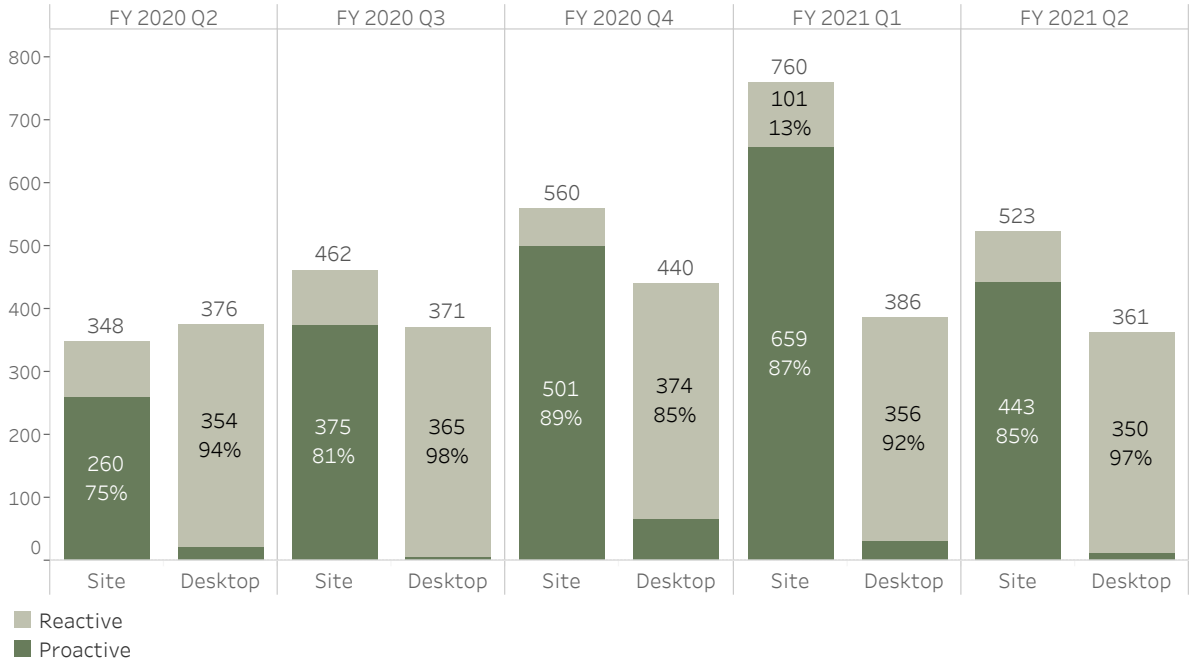
Safety assessments by category and nature

Site-based (visiting mine sites) and desktop activities are both important regulatory tools. While the 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 26. SAFETY ASSESSMENTS BY CATEGORY AND NATURE OCTOBER 2019 TO DECEMBER 2020

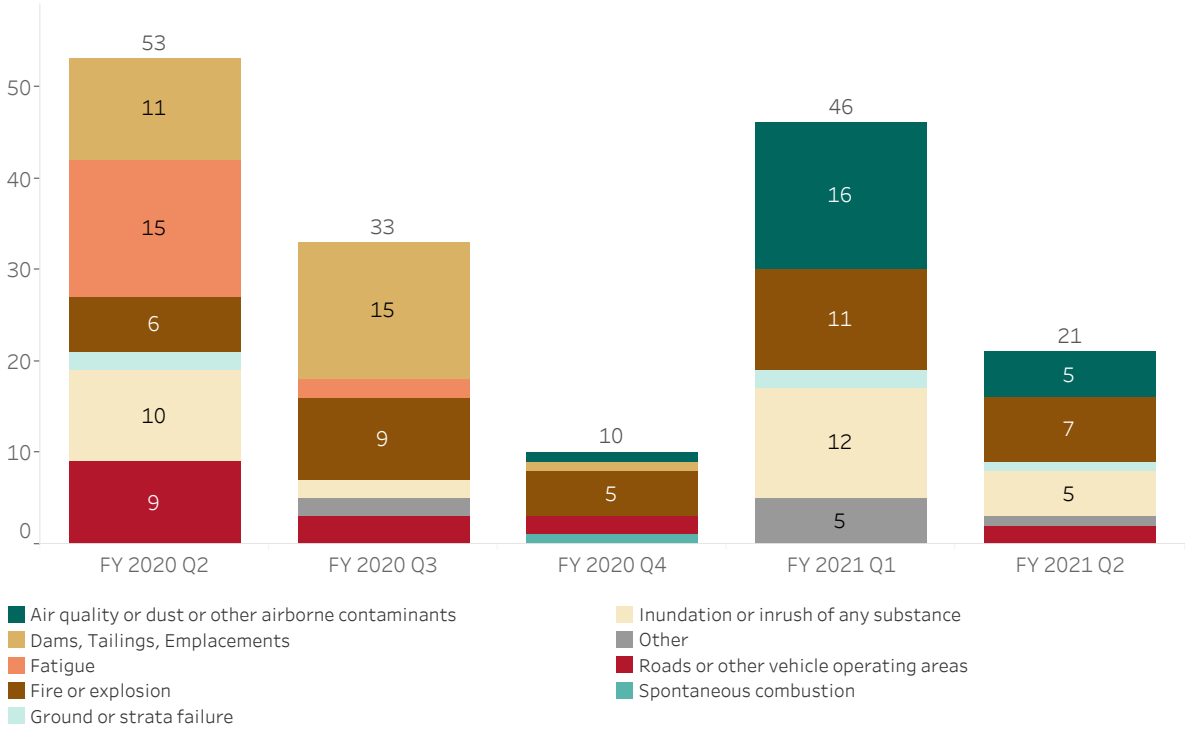


Targeted assessment program

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, 21 targeted assessments were commenced, across six different hazards.

FIGURE 27. TARGETED ASSESSMENTS BY HAZARD OCTOBER 2019 TO DECEMBER 2020

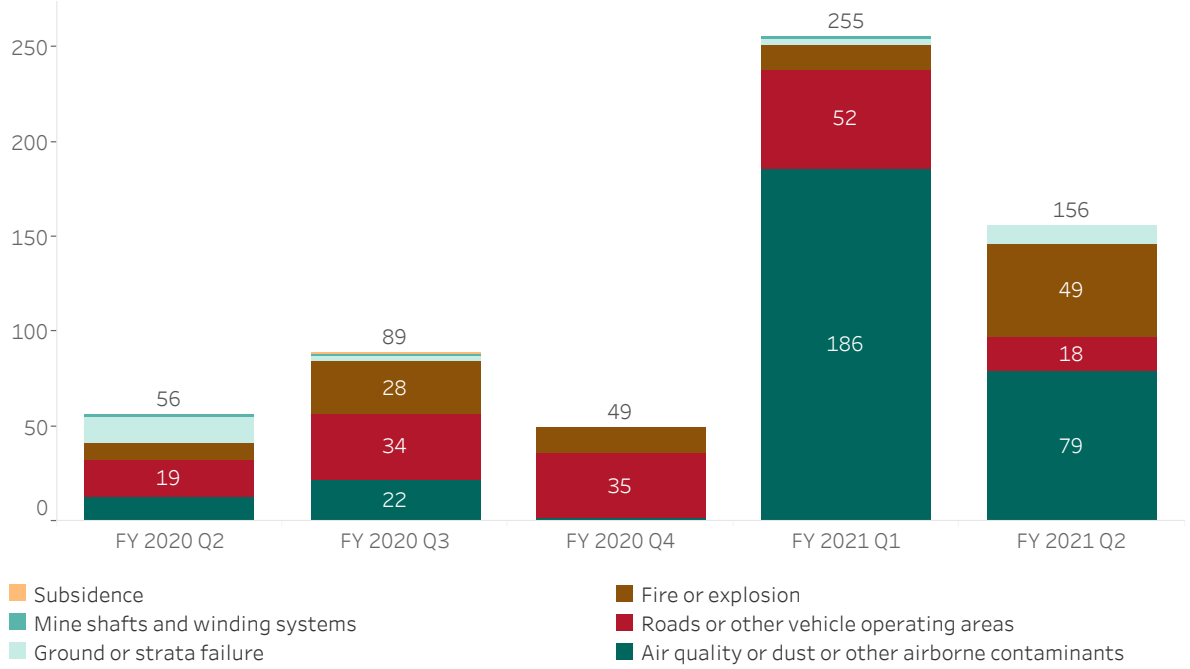


Planned inspections

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.

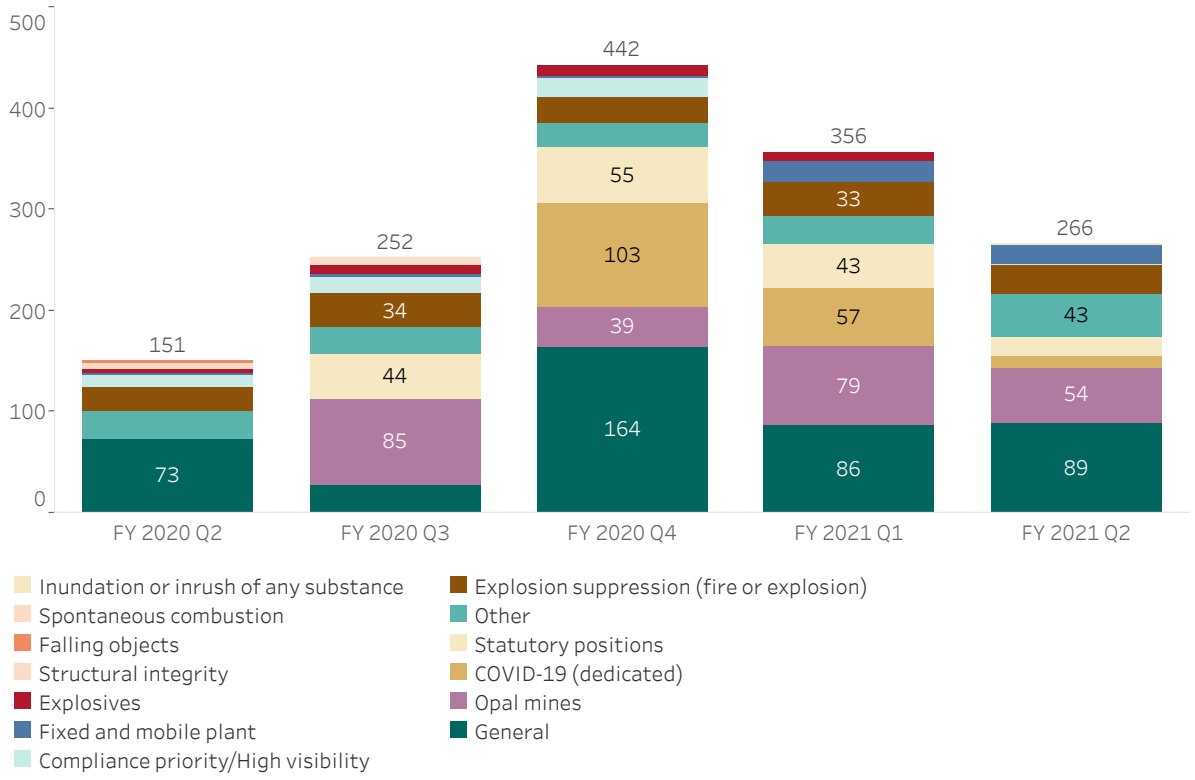
Planned site inspections were commenced on the principal hazards shown in the graph below.

FIGURE 28. PLANNED INSPECTIONS BY PRINCIPAL HAZARD OCTOBER 2019 TO DECEMBER 2020



The graph below shows planned site inspections commenced on 'other' hazards. Our dedicated inspection program on how mine operators were responding to the risks of COVID-19, concluded this quarter.

FIGURE 29. PLANNED INSPECTIONS BY 'OTHER' HAZARD OCTOBER 2019 TO DECEMBER 2020

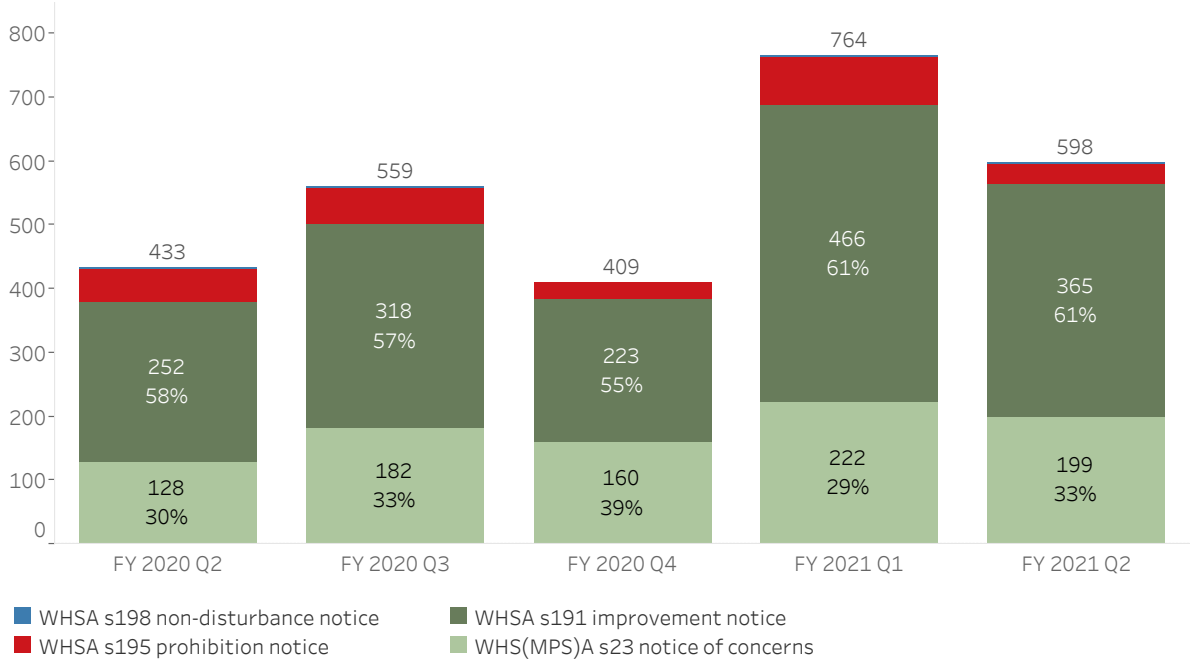


Safety notices issued

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 October 2019. FY2021 Q2 saw a decrease in the number of notices issued. The decreased number of proactive and reactive programmed assessments undertaken during the quarter, contributed to this observed decrease in notice numbers.

FIGURE 30. SAFETY NOTICES ISSUED BY NOTICE TYPE OCTOBER 2019 TO DECEMBER 2020



The figure below shows safety notices issued by mining sector. For the October – December 2020 quarter, over 40% of safety notices were issued to small mines, making it the largest contributing sector to the number of notices issued for the fourth quarter running.

FIGURE 31. SAFETY NOTICES ISSUED BY SECTOR OCTOBER 2019 TO DECEMBER 2020