



**NSW
Resources
Regulator**

Quarterly safety report

April to June 2022



ABOUT THIS REPORT

This quarterly health and safety performance report has been prepared by the NSW Resources Regulator for mine and petroleum site 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 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.

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 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, and summarises safety incident notifications, compliance activities and outcomes for the quarter of April to June 2022 (FY2022 Qtr4). For selected measures, data is analysed over a 15-month period from April 2021 to June 2022.

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

In this quarter, total incident notifications received by principal hazard were up (from 161 to 176). This figure, however, represents a slight reduction from the quarterly average (179) recorded for the previous 4 quarters.

Notifications increased for the principal hazards of fire or explosion (47 to 58) and for air quality or dust or other airborne contaminants (28 to 43). Notification for the principal hazards of subsidence (3 to 4) and spontaneous combustion (0 to 3) also increased. However, notifications for the principal hazards of roads or other vehicle operating areas (55 to 44), and ground or strata failure (27 to 22) reduced.

Incident notifications received by principal control plans increased across one of the five classifications (electrical engineering), with notifications for the other control plans recording slight reductions.

Finally, the Regulator launched its new website late last year. The website improves the overall user experience and has a focus on mobile device usability. The new site has also been designed to meet best practice and accessibility standards.

We hope you enjoy the new site and the new layout. We welcome your feedback to assist us with ongoing improvements to the website. Please email any feedback or suggestions to industry.engagement@planning.nsw.gov.au.

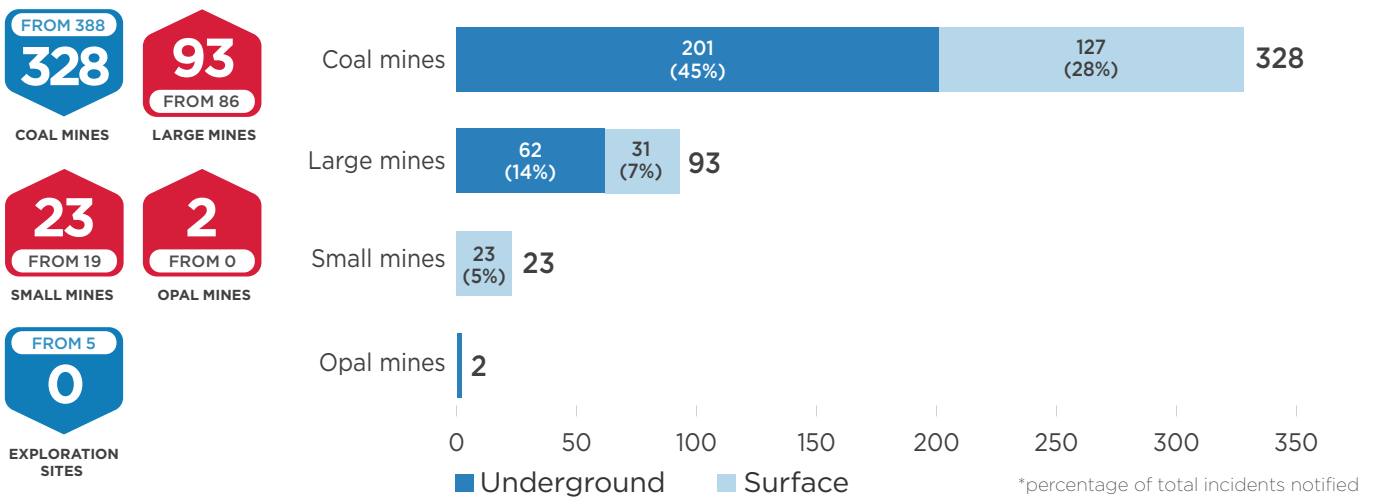
Quarterly snapshot

The quarterly safety performance snapshot shows key measures and assists industry in the development and promotion of safe work practices at mining operations.

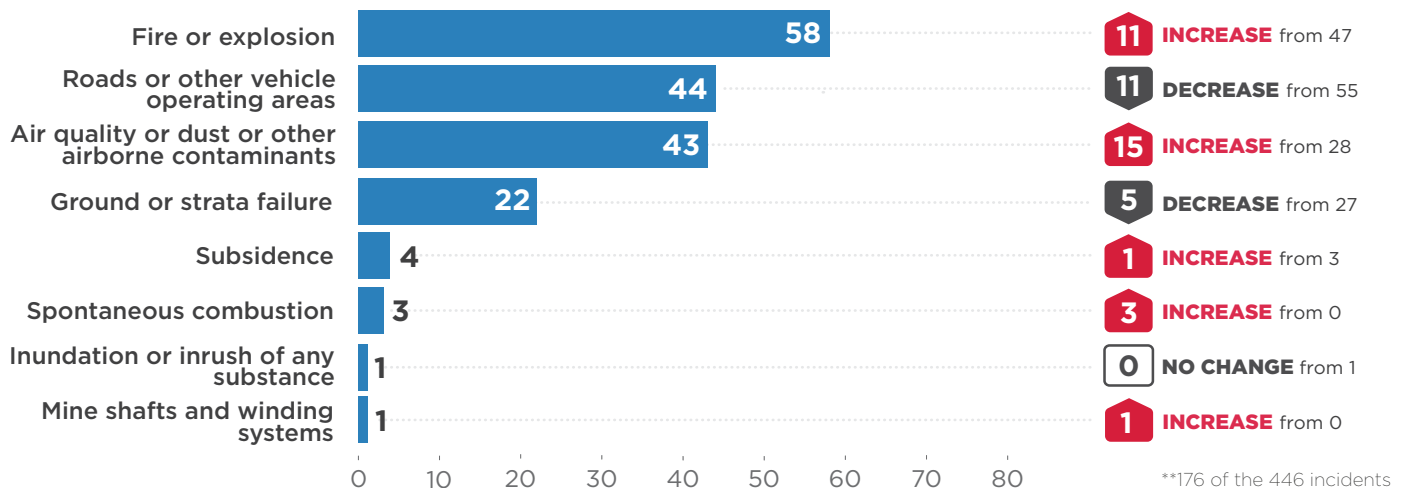


* by requirement to report as notified by mines. The actual number of incidents, injuries and illnesses recorded may differ from original incident notifications following assessment of the notified event.

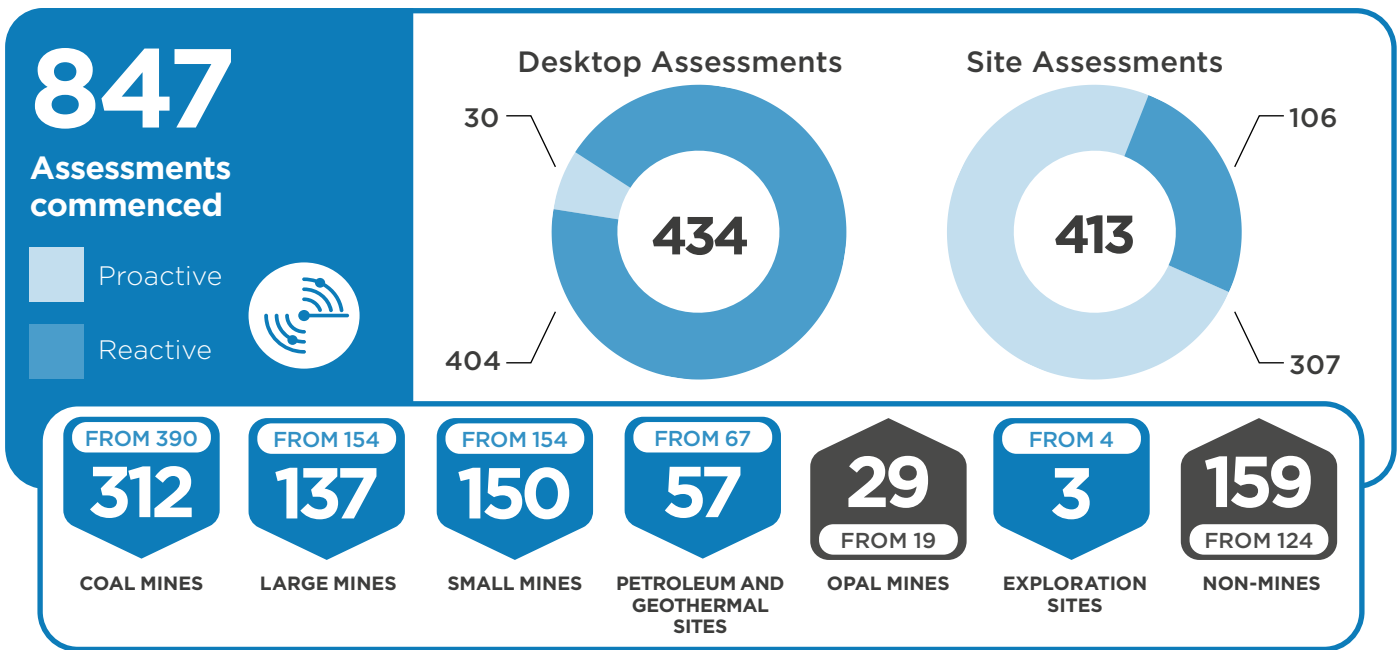
Incident notifications received by sector and operation type



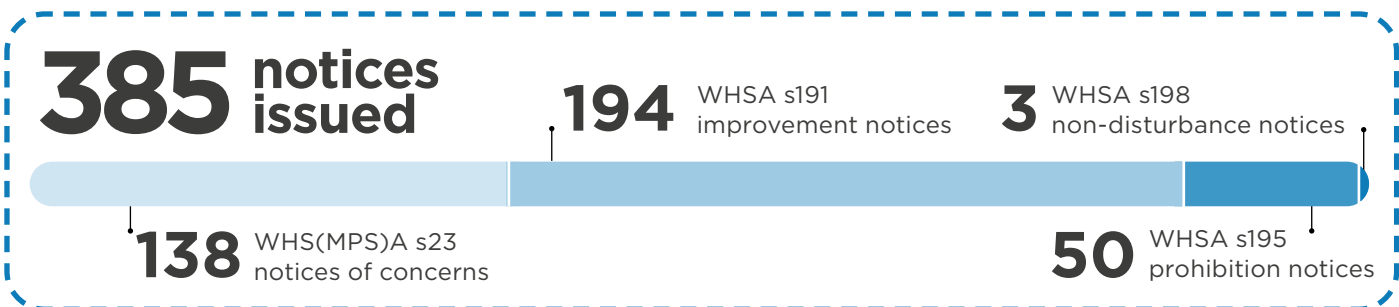
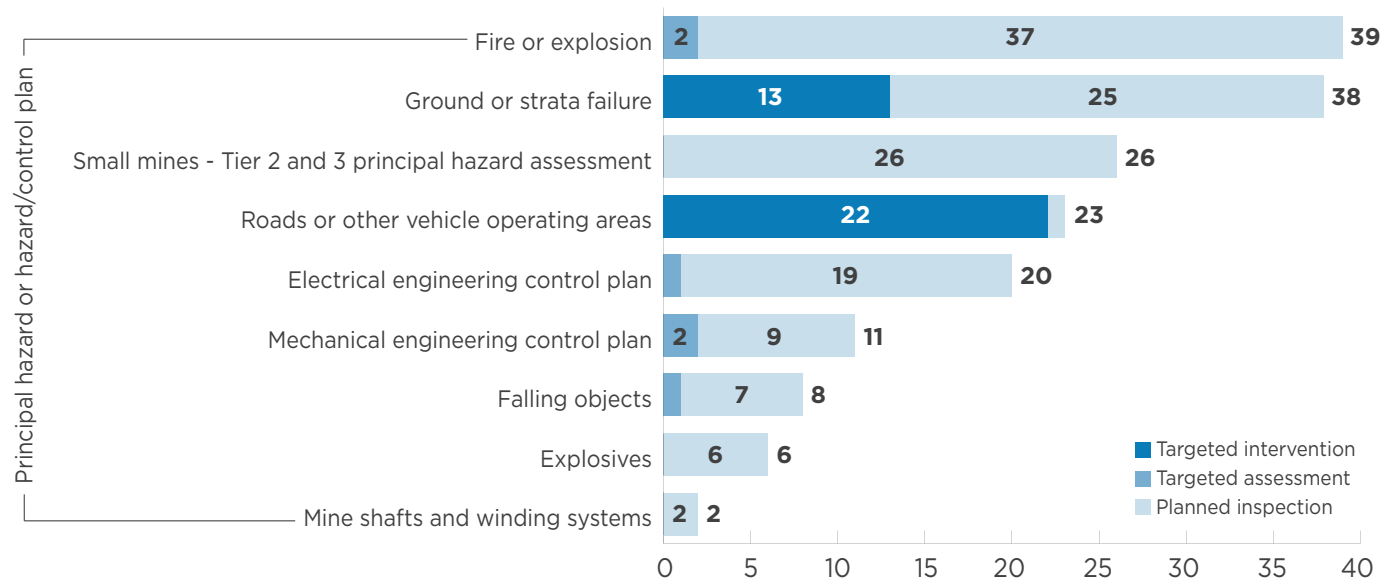
Incident notifications classified by principal hazard**



Quarterly snapshot



Programmed site assessments conducted*



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.

The following list includes safety alerts (including fatalities) and bulletins that occurred between **April to June 2022**.

The incidents selected were based on their relevance to equipment and processes commonly used across the NSW mining industry.

Fatal injuries

Australia

NEW SOUTH WALES

There were no mine or quarry related fatalities reported this quarter.

OTHER STATES

Queensland

There were no mine or quarry related fatalities reported this quarter.

Western Australia

There were no mine or quarry related fatalities reported this quarter.

Victoria

On 20 June 2022, emergency responders were called to Agnico Eagle Mines' Fosterville Gold Mine, 158km north of Melbourne, after employees discovered a motionless and non-responsive co-worker. The worker was subsequently pronounced as deceased. Police and WorkSafe Victoria have launched an investigation.

International

UNITED STATES OF AMERICA

There were 3 mining or quarry related fatality alerts recorded (published) by United States of America's Mine Safety and Health Administration (MSHA), during the quarter:

- On 17 June 2022, a contract miner died when the compactor he was operating overturned, pinning him beneath the cab. As the miner was backing up, the left tyre went off the edge of a four-foot embankment, causing the compactor to overturn. Refer to [fatality alert](#).

- On 20 June 2022, a worker died when he was trapped inside the cab of an excavator which was engulfed by materials after a mine collapse. Refer to [fatality alert](#).
- On 20 June 2022, a contract driller was working outside of his drill when he fell from the top of a highwall. Refer to [fatality alert](#).

INDIA

India's Ministry of Environment, Forest and Climate Change reported a mine accident on 9 May 2022 at the illegal mining site of Kaparsa Colliery of Eastern Coalfields Limited (ECL), Nirsa Block, Dhanbad, Jharkhand. Three workers were killed due to a mine roof collapse. Local media reported that family members of the deceased left the site along with the dead bodies fearing legal action. Colliery management have been instructed to install appropriate security forces at such sites to prevent entry of unauthorised persons.

POLAND

A total of 18 people are confirmed to have died after 2 coal mine accidents in southern Poland involving firestorm explosions – on 20 April 2022 at the Pniowek mine and 23 April 2022 at the Borynia-Zofiowka mine. A firestorm explosion occurs as a result of mixing air with a certain amount of methane gas. Poland's Prime Minister, Mateusz Morawiecki, said it was a "black week" for the nation's coal industry that employs almost 80,000 miners and said the families of victims will receive state support.

SERBIA

On 1 April 2022, 8 miners were killed and 18 injured when a shaft collapsed at a state-owned coal mine in southern Serbia. The Mining and Energy ministry said the accident at the Soko mine, about 250 kilometres south of Belgrade, happened when coal collapsed in an excavation chamber, leading to "a sudden penetration of methane into the working space".



Alerts, bulletins, fact sheets and incident information releases

New South Wales

SAFETY ALERTS AND BULLETINS

- [SA22-01 Worker burnt during hot work](#)
- [SB22-05 Crane incidents on the rise](#)
- [SB22-06 Pipe clamp failures](#)
- [SB22-07 Collisions on overburden dumps](#)
- [SB22-08 Issues found with forklifts](#)
- [SB22-09 Mobile plant and vehicle fires associated with diesel exhaust treatment](#)

FACT SHEETS

- [Bullying and harassment](#)
- [COVID-19 and mining operations - June 2022 update](#)

REPORTS

- [Consolidated report - Ground or strata failure - slope stability - stage 2 - open cut coal mines](#)
- [Consolidated report - Air quality or dust or other airborne contaminants - stage 2 - coal mines below surface](#)
- [Consolidated report - Entanglement - Small mines - June 2021 to March 2022](#)
- [Targeted intervention program - Storage of security sensitive ammonium nitrate](#)
- [Regulatory Impact Statement - Work Health and Safety \(Mines and Petroleum Sites\) Regulation 2014](#)

INVESTIGATION INFORMATION RELEASES

- [IIR22-01 Mandalong workers injured during pipe installation](#)
- [IIR22-02 Unplanned initiation of explosives at Peak Gold Mine](#)

Queensland

- **Wire rope counterweight fall from height after becoming caught during rig up operations**

A winch line counterweight became snagged during rig up operations, causing the steel wire rope to break. The counterweight dropped to the rig floor, resting near the Derrickman. No persons were injured, however the 5.7kg counterweight landed less than 1m from a rig worker. Refer to [Safety Alert](#).

- **Unplanned release of joint from elevators during CSG drilling operations**

An uncontrolled opening of the elevators occurred during drilling operations, resulting in a joint being released. The joint fell back, resting on the pipe arm. No persons were injured and there was no equipment damage. Refer to [Safety Alert](#).

- **Near miss - blasthole drill rig trammed into highwall protection berm**

A near miss occurred when a coal mine worker was operating a DK90 rotary blasthole drill rig during nightshift. When relocating to the next hole position, the trainee operator trammed the rig onto the highwall edge protection berm. By the time the operator had stopped tramping, the nose of the tracks had reached the top of the berm and the operator's cab was likely suspended past the edge of the highwall. Refer to [Safety Alert](#).

- **High Pressure Water Jetting System operations and compliance requirements**

The continued focus area on high pressure water jetting systems (HPWJS) across the Petroleum and Gas Industry has identified non-compliances with regulatory obligations to manage water jetting operations. The *Petroleum and Gas (Production and Safety) Act 2004* calls up the Abrasive Blasting Code of Practice which in turn mandates compliance with AS/NZS 4233.1 and 4233.2 for Class A and Class B systems. Refer to [Safety Alert](#).

- **Audit findings: Spirometry practices**

Resources Safety and Health Queensland (RSHQ) undertakes audits of spirometry as part of ongoing compliance and quality improvement processes for the Coal Mine Workers' Health Scheme (the Scheme). The audits target problem areas identified in the [2016 Monash Review](#) including spirometry training, equipment and maintenance, and test quality. Refer to [Safety Bulletin](#).

- **Light vehicle fail-safe brake interlocks**

An incident occurred in an underground mine when a worker exited a light vehicle to open a barricade into a mobile equipment operating area. After exiting the vehicle, it rolled backwards, striking the worker with the open door and continued to travel down the decline for approximately 100m. The vehicle came to rest after striking the decline wall with the tray. The worker sustained injuries because of the incident. Refer to [Safety Alert](#).

■ **Impact of flooding on slope stability at mines and quarries**

Several mines and quarries have recently reported incidents associated with slope instability and failures in ground integrity to the MMQ Inspectorate. Refer to [Safety Alert](#).

■ **Use of liquid nitrogen in the mining industry**

On 17 May 2022, a worker received serious cryogenic burns after immersing their hands in a container of liquid nitrogen whilst trying to shrink a brass bush for inserting into an excavator boom arm. Whilst this incident did not occur on a mine site, this type of work may be conducted on mine sites, and in many cases may be done by contractors. Regardless of who conducts the work, the Mine Safety and Health Management System must manage the risks associated with the safe use and handling of liquid nitrogen or similar substances, if it is used at the mine. Refer to [Safety Alert](#).

■ **Overpressure event in a TEG reboiler column causing a significant fall from height**

A triethylene glycol (TEG) reboiler termination cap discharged under pressure from the reboiler column due to an over pressure event which occurred whilst workers were switching between pumps. No persons were injured, however the approximately 10kg cap landed in an area of the plant where workers could have been standing. Refer to [Safety Alert](#).

■ **Integrity of structures at Mineral Mines and quarries**

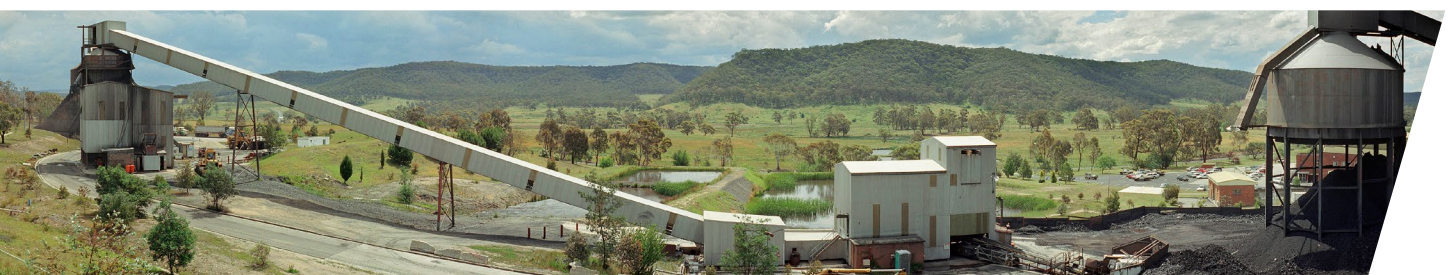
Since 2011 there have been 129 reported incidents involving the failure of structures in the mineral mines and quarries sector, with 19 of those occurring in the last 12 months. These structural failures have resulted in uncontrolled movements, and falls of objects, persons and, in some circumstances, whole structures. All of these incidents had the potential to cause serious harm to persons. Refer to [Safety Bulletin](#).

■ **Theft of equipment from well sites**

The Petroleum and Gas Inspectorate have received numerous reports of theft from upstream operators in recent days. Examples of items stolen or damaged include earth cabling, general cables, batteries and diesel fuel. Refer to [Safety Bulletin](#).

■ **Lifting and rigging incidents**

Recent high potential incidents and serious accidents reported to the mines inspectorate have raised concerns about lifting and rigging activities, especially where chain blocks and lever hoists were used and / or loads were being drifted. Drifting loads refers to moving loads horizontally while being suspended. The high potential incidents reported have involved coal mine workers (CMWs) being struck, or nearly struck by loads that were being lifted, lowered, or suspended. Refer to [Safety Bulletin](#).



- **Serious injury caused by hot TEG release**

A worker was preparing to drain hot Triethylene glycol (TEG) from a TEG dehydration unit at a petroleum processing facility when the hot liquid came in contact with the worker's hand. The worker was hospitalised with serious injuries to his left hand. Refer to [Safety Alert](#).

- **Arc flash safety video**

An arc flash is a release of electrical energy that causes an explosion which can reach temperatures of up to 20,000 degrees Celsius. An arc flash usually occurs in large switchboards but can also occur in smaller switchboards, electricity supply pillars or large electrical equipment. See [video](#).

Victoria

- **Ladders falling without warning**

Recently, in separate incidents, 2 people fell from ladders and were seriously injured when the ladders they were on failed without warning. Both of the ladders had plastic/polymer structural components that appeared to have UV (sun) damage/deterioration. Refer to [Safety Alert](#).

New Zealand

- **Fire on front end loader**

A fire started suddenly in the engine of a frontend loader at a quarry. Several extinguishers were used to put the fire out, but ultimately the fire brigade extinguished it. Fire damage made it impossible to ascertain the exact cause, however there were signs of a bird's nest beside the intercooler pipe. The fire was concentrated around the fuel water separator and could have resulted from fuel or hydraulic leaks. None had been reported prior to the incident. It is possible electrical wiring had rubbed through and shorted out, however fire damage destroyed most of the engine harness therefore it was impossible to identify the exact location where the fire started. Refer to [Safety Alert](#).

- **Plant on plant interaction**

A 36t excavator was working adjacent to a haul road. When the water cart drove past, the excavator operator has swung on the blind side and the bucket of the excavator hit the cab of the water cart, displacing the roof of the vehicle cabin and damaging the windscreen. Refer to [Safety Alert](#).

- **Fall from dozer**

A dozer was stripping topsoil and ceased operations so that the radiators and intercooler could be cleared out from accumulated dust. The operator was dismounting from the machine and opened the engine bay door. As the door was opened, he fell backwards and caught his leg on a foot plate before landing on his back on the ground. He sustained a serious laceration

to the left calf muscle requiring admission to hospital and corrective surgery. Injuries were also sustained to his shoulder and ribs. MinEx data on incidents with the potential to cause harm over the four years to December 2021 shows 16% (728) of all incidents involve falls, with 307 incidents resulting from fall of a person. Refer to [Safety Alert](#).

■ **Excavator contacts powerline**

An excavator was tramming along a haul road when the boom of the excavator contacted an energised 11kVA overhead powerline. The operator noticed an electrical arc above the cab and reversed from the powerline. One phase of the powerline was severed and dropped to the ground in a couple of locations, causing a small grass fire. Refer to [Safety Alert](#).



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 5 quarters as classified against a principal hazard or principal control plan.

Overall, there were 446 incident notifications received in the current quarter. Of these, 39% (176) related to principal hazards, 25% (111) related to principal control plans, with the remainder related to other incident types.



TABLE 1. INCIDENT NOTIFICATIONS CLASSIFIED BY PRINCIPAL HAZARD/PRINCIPAL CONTROL PLAN - APR TO JUN 2022

INCIDENT CLASSIFICATION BY PRINCIPAL HAZARD OR PRINCIPAL CONTROL PLAN		FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Principal hazard	Air quality or dust or other airborne contaminants	52	50	50	28	43
	Fire or explosion	54	67	70	47	58
	Ground or strata failure	15	28	18	27	22
	Inundation or inrush of any substance				1	1
	Mine shafts and winding systems					1
	Roads or other vehicle operating areas	38	55	35	55	44
	Spontaneous combustion	5	9	1		3
	Subsidence	2	2	4	3	4
Total		166	211	178	161	176
Principal control plan	Electrical engineering control plan	23	23	20	13	25
	Electrical engineering control plan and/or Mechanical engineering control plan	37	33	48	40	37
	Explosives control plan	19	11	24	26	13
	Mechanical engineering control plan	45	40	57	60	36
	Ventilation control plan	1	2	1	2	
Total		125	109	150	141	111
Other	No related principal mining hazard or principal control plan	188	176	127	196	159
GRAND TOTAL		479	496	455	498	446

Principal mining hazards

Note: that while only one hazard/control plan per incident appears in the report, it is possible for more than one hazard or control plan to be applicable to the incident.



AIR QUALITY OR DUST OR OTHER AIRBORNE CONTAMINANTS



GROUND OR STRATA FAILURE



SUBSIDENCE



INUNDATION OR INRUSH OF ANY SUBSTANCE



MINE SHAFTS AND WINDING SYSTEMS



GAS OUTBURSTS



SPONTANEOUS COMBUSTION



ROADS OR OTHER VEHICLE OPERATING AREAS



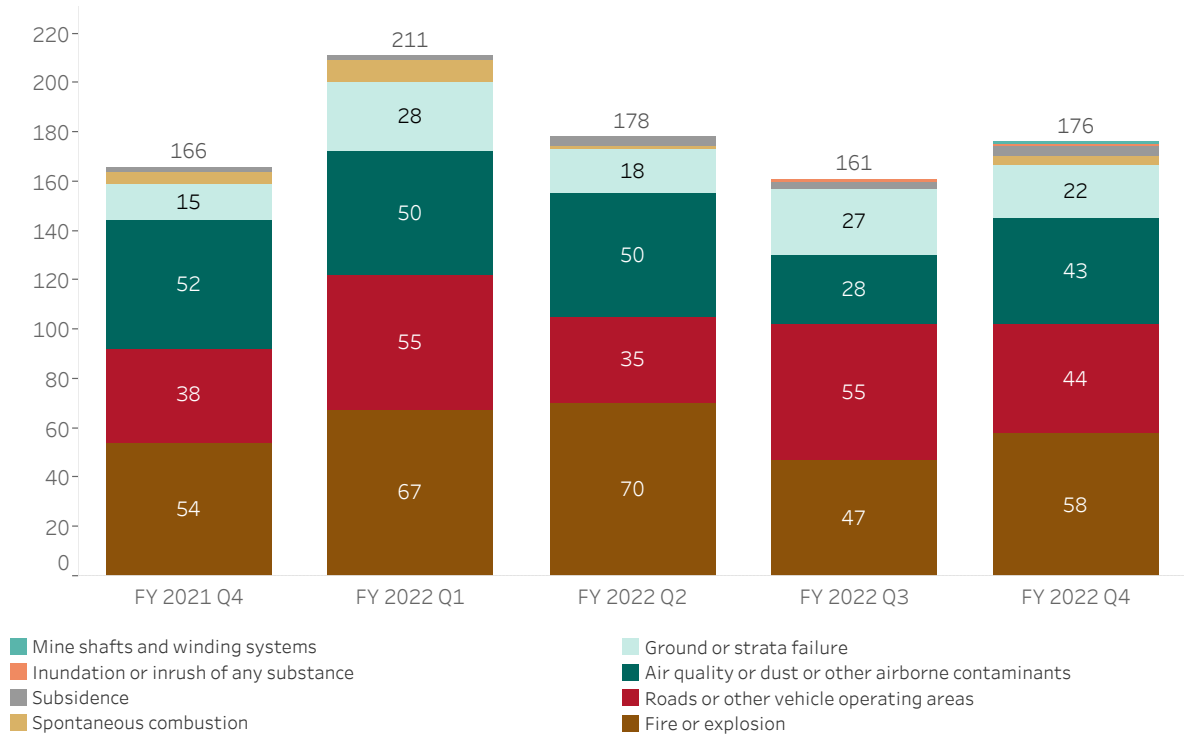
FIRE OR EXPLOSION



(HAZARDS IDENTIFIED BY THE MINE OPERATOR) PROHIBITED ITEMS OR SUBSTANCES

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

FIGURE 1. INCIDENT NOTIFICATIONS RECEIVED BY PRINCIPAL HAZARD APRIL TO JUNE 2022



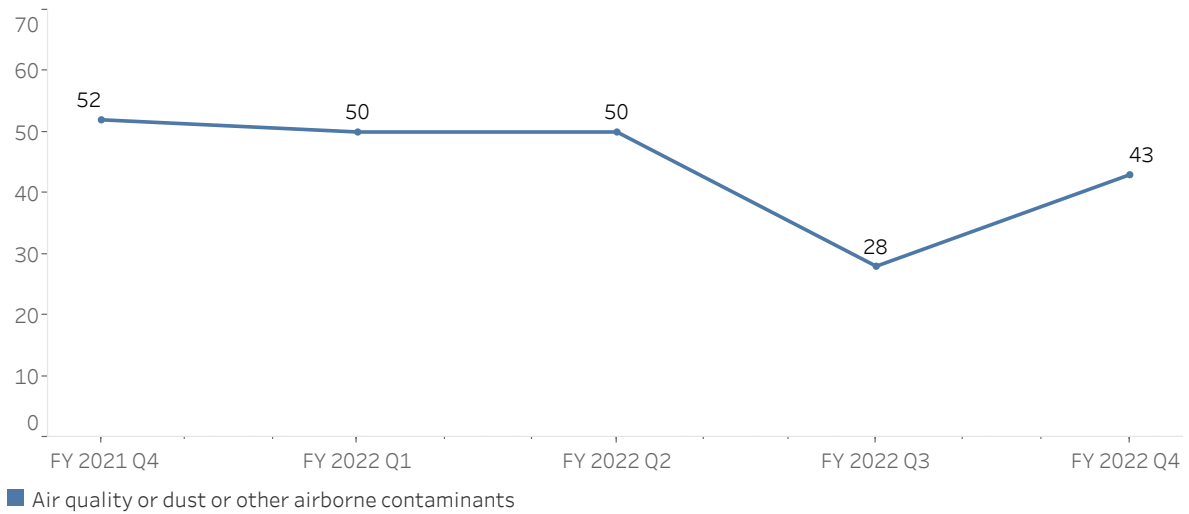


Air quality, dust or other airborne contaminants



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/silica dust).

FIGURE 2. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD AIR QUALITY, DUST OR OTHER AIRBORNE CONTAMINANTS - APRIL TO JUNE 2022



DANGEROUS INCIDENT - WORKERS EXPOSED TO SILICA DUST

During routine dust sampling of a development crew, the deputy exceeded the occupational exposure limit for respirable quartz. At the time of sampling, the continuous miner was cutting 0.4-0.6m of stone.

Comments to industry: When cutting stone, controls to manage airborne dust must be maintained to the site's documented standards. This includes keeping ventilation tubes advanced to the face, tube length within design limits, maintaining picks and sprays, having dust curtains in place and workers positioned in safe locations.

HIGH POTENTIAL - TRUCK DRIVER EXPOSED TO SILICA DUST

A truck driver was exposed to respirable silica above occupational exposure limit (OEL) during routine Order 42 monitoring.

Comments to industry: Mine operators should ensure that control measures are implemented and maintained for minimising dust in operator cabins. This includes filtration of incoming air and sealing of cabs. Mine operators have a duty to manage risks and implement a range of control measures including:

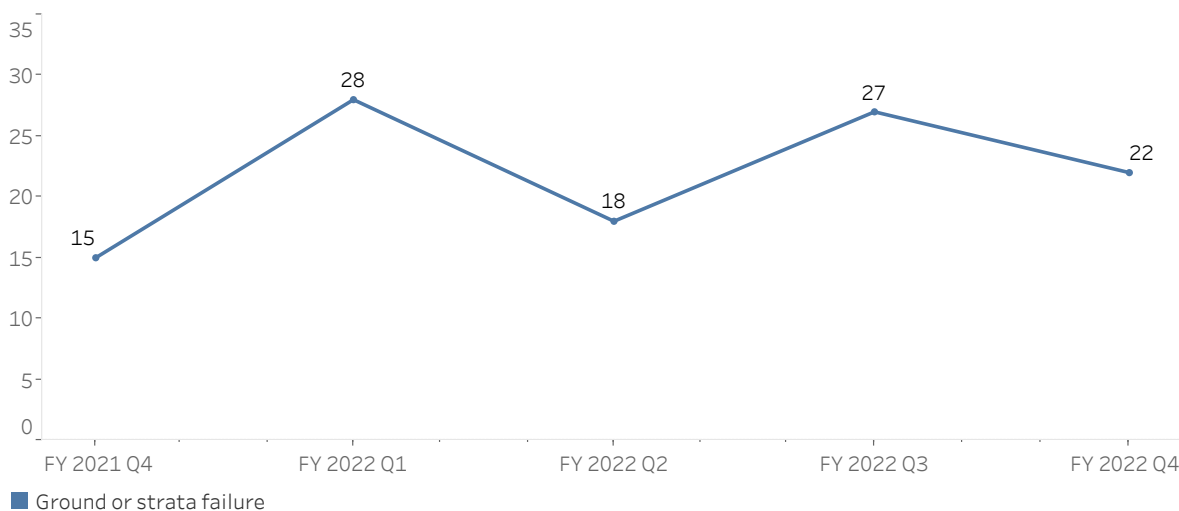
- a principal hazard management plan for air quality or dust or other airborne contaminants
- ensuring the exposure standards for respirable and inhalable dust are not exceeded
- implementing air quality, monitoring and ventilation arrangements.



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 - APRIL TO JUNE 2022



DANGEROUS INCIDENT - HIGHWALL FAILURE

A highwall failed and material breached the exclusion control zone in a known geotechnical hazard area. A grader was operating in the area at the time. The operator felt a vibration, noticed dust and quickly drove away from the highwall. The worker was clear of the falling material.

Comments to industry

Recent highwall failures in NSW mines have resulted in material overwhelming catchment bunds and exclusion zones. Mine operators should ensure an adequate exclusion zone is established based upon the maximum reasonable potential of a failure occurring, including the potential for a failure to extend through to adjacent jointing/faults. Mine operators should also ensure water egress is minimised to highwall crests to reduce the potential of a failure occurring. Refer to [Safety Bulletin: SB20-01 Failure of highwalls, low walls and dumps.](#)

Below: Photograph showing the extent of the failure



DANGEROUS INCIDENT - ROOF FALL

A fall of roof occurred, extending above a bolted horizon. The roadway was supported with bolts and mesh. The fall was about 15m long, partial width and extended 500mm above the centre bolts.

Comments to industry

Mine operators should have a process in place to identify changes in roof structure and the required support in that area (TARPS). Strata support should be designed with a suitable factor of safety. Workers must be trained in the correct installation of support to ensure 'gloving' does not occur and the chemical is correctly mixed. Regular verification of encapsulation needs to be completed and any bolt installation that does not meet the requirements of the support rules should be replaced. Statutory officials must verify support placement is as per the support rules.

Below: Extent of the fall debris



DANGEROUS INCIDENT - CORRODED BOLTS LEAD TO FALL OF GROUND

A fall of ground occurred when corroded roof bolts failed. The fall of material was estimated to be 1.5 tonnes. Nobody was in the area at the time.

Below: Plates still in place.



Below: Close up of corrosion damage.



Comments to industry

Underground mine operators should review the adequacy of support that was installed historically under different support regimes. The review should check that the age of installed support is taken into account and that the support continues to be effective.

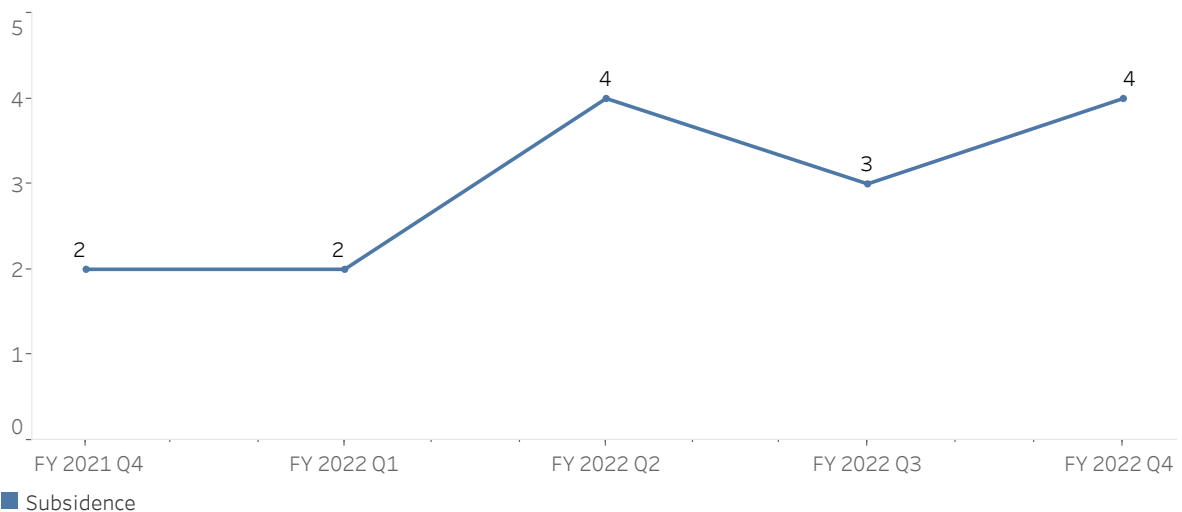
Refer to [Fall of ground risks at NSW underground metalliferous mines](#).



Subsidence

Surface subsidence is a potential hazard where 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 - APRIL TO JUNE 2022



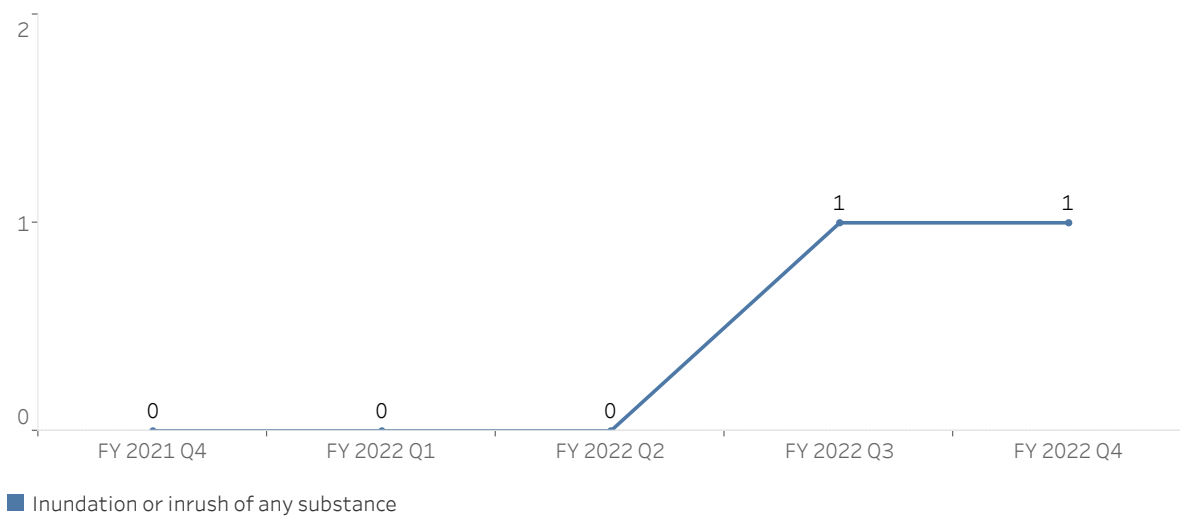


Inundation or inrush of any substance



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 OF ANY SUBSTANCE - APRIL TO JUNE 2022



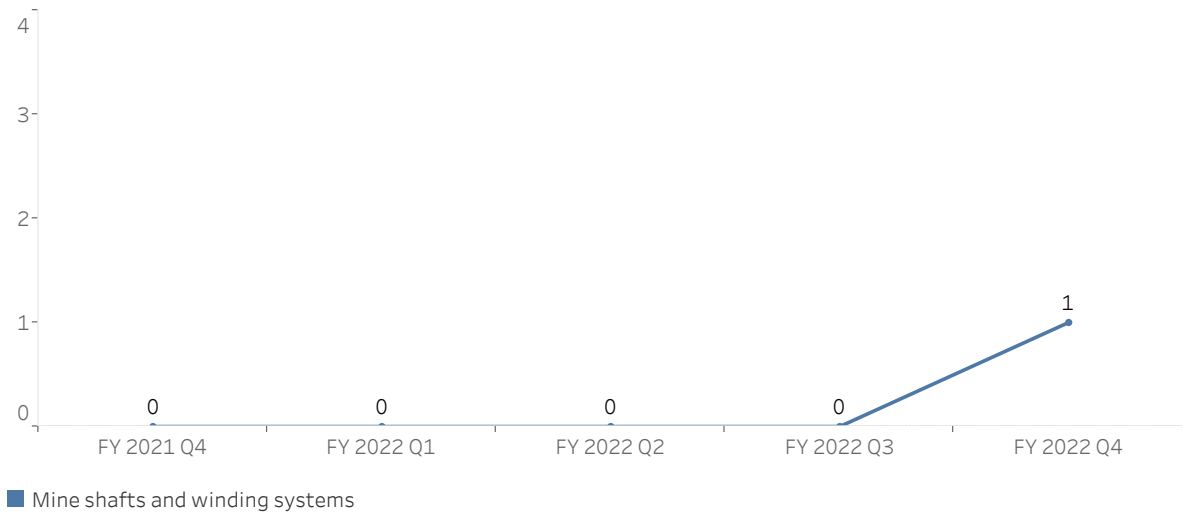


Mine shafts and winding systems



Mine shaft integrity and the operation of winding systems require specific focus. The safe movement of material and workers up/down mine shafts can be 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 - APRIL TO JUNE 2022

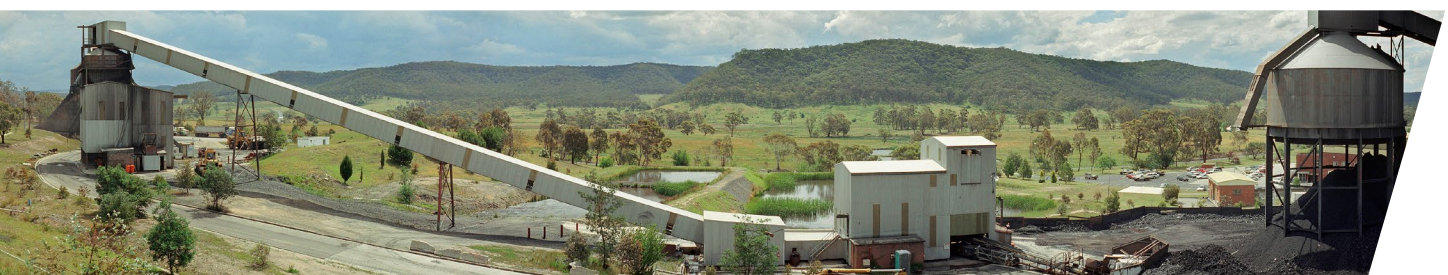


Gas outbursts



The implementation of appropriate risk controls ensure gas outbursts are not a high frequency hazard event, however 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 fuel a fire. These circumstances make this a principal hazard in NSW.



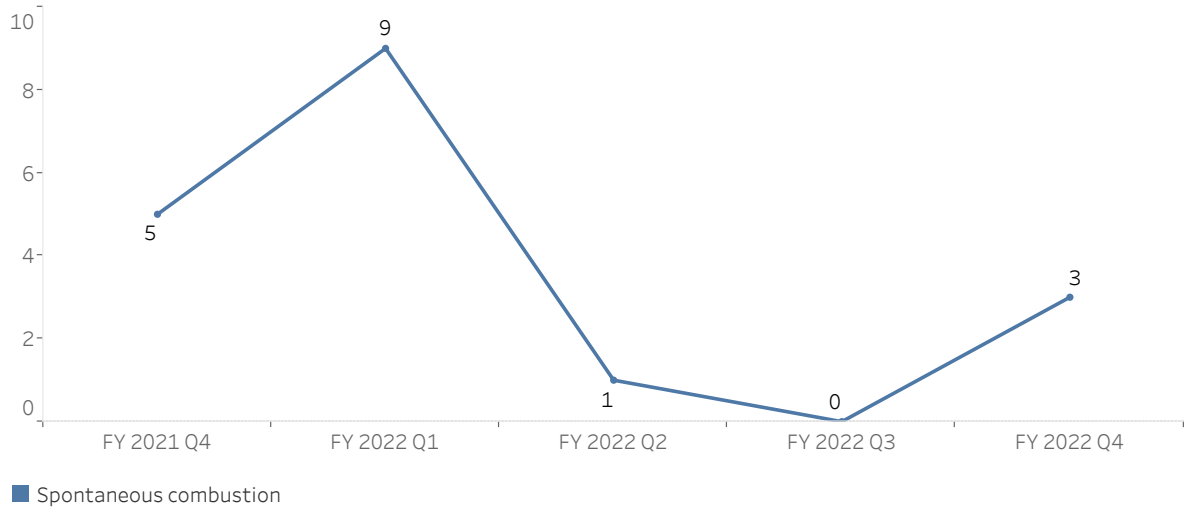


Spontaneous combustion



While spontaneous combustion (of coal) is a hazard exclusive to the coal sector, in the underground parts of the mine the consequences have the potential to cause multiple fatalities.

FIGURE 7. INCIDENT NOTIFICATIONS RELATED TO THE PRINCIPAL HAZARD SPONTANEOUS COMBUSTION - APRIL TO JUNE 2022

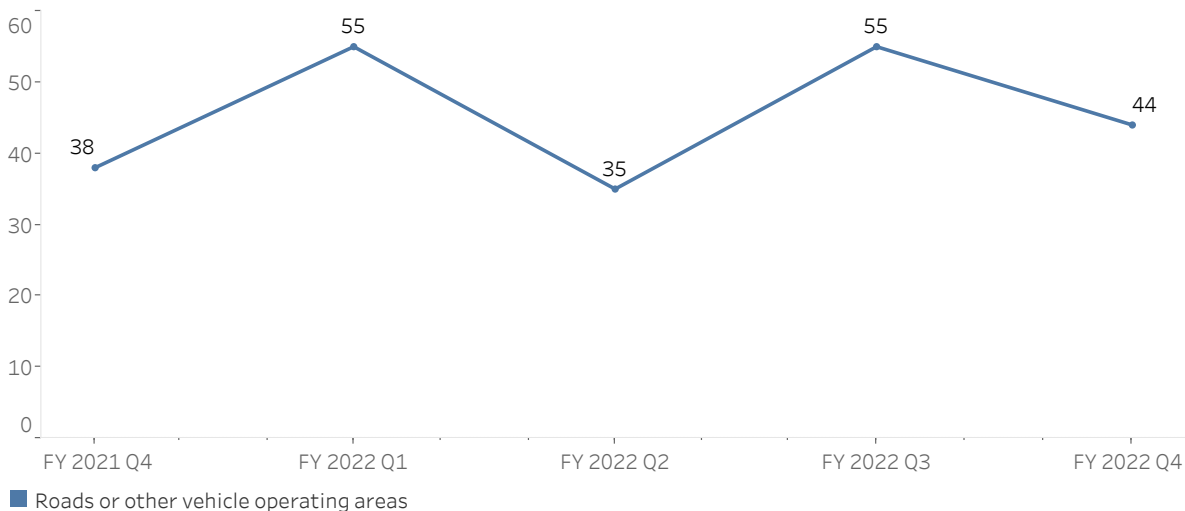


Roads or other vehicle operating areas



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 - APRIL TO JUNE 2022



DANGEROUS INCIDENT- DISTRACTION LEADS TO OVERTURN

A light vehicle was travelling along a haul road. The operator was distracted by an open lid on a toolbox and has driven up a windrow and rolled onto the roof. The driver exited the cab of the vehicle with no injuries.

Comments to industry

Workers must always remain focused on controlling their vehicle. If a situation develops that requires their attention, such as an open toolbox, operators should safely stop the vehicle before addressing the issue.

Below: The overturned light vehicle



DANGEROUS INCIDENT - MICROSLEEP LEADS TO COLLISION

A grader collided with a stationary dump truck after the operator suffered a microsleeper. Nobody was injured and the damage was minor.

Comments to industry

Mine operators should review their fatigue policy and site compliance. Contractor work groups should be included in this review. Schedule 2 of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 includes the requirement that a health control plan must address control measures for minimising the risk that a worker will be impaired by fatigue. Mine operators should include worker fatigue monitoring and response technology as a part of their fatigue risk analysis.

Below: Area of wet ground and position of haul truck



DANGEROUS INCIDENT - MICROSLEEP LEADS TO VEHICLE OVERTURN

A mine supervisor had a microsleeper while driving along a light vehicle road. The vehicle drove up onto a windrow and rolled onto the driver's side. The supervisor was not injured. The supervisor failed to preserve the scene and arranged for the vehicle to be righted and taken to a park-up area.

Comments to industry

Workers must present to work fit for duty. This involves having suitable sleep before starting a night shift. Mine operators are reminded of their obligations under the health control plan to ensure control measures have been identified and implemented to ensure workers are fit to carry out work and minimise the risk that workers could be impaired by fatigue.

Below: The light vehicle after rolling



DANGEROUS INCIDENT - HAUL TRUCK BREACHES WINDROW

A haul truck operator was reversing at an angle into a corner to tip its load when the right side rear wheels pushed through a windrow, causing the truck to bottom out on the windrow. The driver safely exited the truck.

Comments to industry

Mine operators should review their tipping procedures and consider controls such as tipping short in corners, using a spotter in similar circumstances and training/competency/experience of operators.

Below: The haul truck (centre left) over the windrow

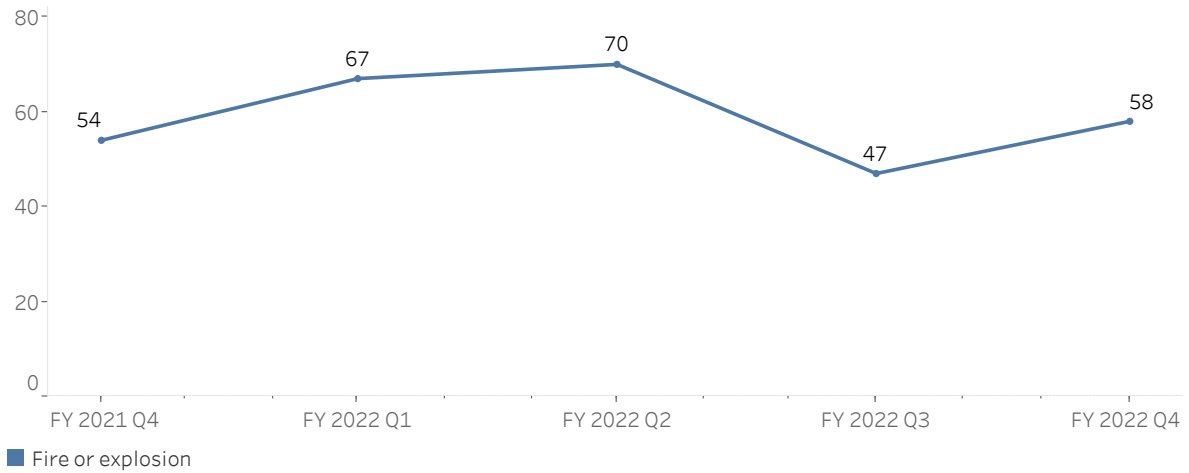




Fire or explosion

This principal hazard includes risk associated with all sources of flammable, combustibile and explosive substances and materials in the working environment. A common source of these incidents are fires on mobile plant. 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 - APRIL TO JUNE 2022



DANGEROUS INCIDENT - FLAMES IN COAL UNDER DRIFT BELT

A deputy smelled and witnessed smoke coming down a drift in an underground coal mine and contacted the control room. A dolly car operator immediately started an inspection and identified a small flame and smouldering coal under the drift belt. The fire was immediately extinguished. An idler had collapsed and the belt was rubbing on the frame. Excess coal around the roller had ignited.

Below: Coal build up under the belt.



Below: Contact point under the belt.



Comments to industry

Workers conducting inspections on conveyors must diligently inspect for fire risks such as accumulation of coal, failing or collapsed idlers and contact between conveyor belts and fixed structures. Mine operators must have systems in place to assess issues and plan a response to avoid the risk of fire, including immediately stopping the conveyor when necessary. No worker should be hesitant to stop a conveyor if it poses a fire risk.

DANGEROUS INCIDENT - ENGINE DAMAGE STARTS FIRE

A haul truck had dumped a second load for a shift and was leaving the dump. The operator smelled something burning then saw flames around the back of the cabin. The operator shut down the truck and unsuccessfully attempted to deploy the fire suppression system. The operator then escaped safely. The fire was extinguished with the aid of a water cart and on-board fire suppression. Upon inspection, it was discovered that a significant mechanical failure resulted in a large hole in the bottom of the engine which initiated the fire. The truck was recently down for maintenance. A further examination of the truck found that the emergency ladder access gate was extremely stiff and not easily opened. The operator did not use this means of egress.

Below: Parts of the haul truck on the road



Comments to industry

Following the maintenance and repair of mobile plant, the plant should be inspected, tested and verified as fit-for-purpose before being returned to service. Mine operators should also confirm that emergency access systems are included in routine maintenance inspections on all plant.

DANGEROUS INCIDENT - SAFETY DEVICE OVERRIDE LEADS TO FIRE

A diesel pump was being refuelled during commissioning. The auto-fill nozzle clicked off indicating the system was full. The fuel gauge indicated the tank was 87% full, so the operator pushed the nozzle back on and held it in position to continue filling the diesel tank. The operator noticed diesel flowing from the breather, so they disconnected and reeled the hose back to the truck. Fuel contacted the exhaust lagging and ignited. The flame was extinguished using a fire extinguisher.

Comments to industry: Workers must never override safety devices when refuelling. This includes repeatedly filling after the nozzle has clicked off, tying the nozzle handle back to avoid holding it or modifying nozzles to fill machines that are not compatible. Breathers should be positioned clear of ignition points and hot surfaces. Refer to: [Safety Bulletin SB15-03 Fires ignite while refuelling mobile plant with quick-fill fuel systems](#) and [Investigation Information Release IIR17-10 Serious burns while refuelling mobile plant](#).

Below: Ignition point on pump



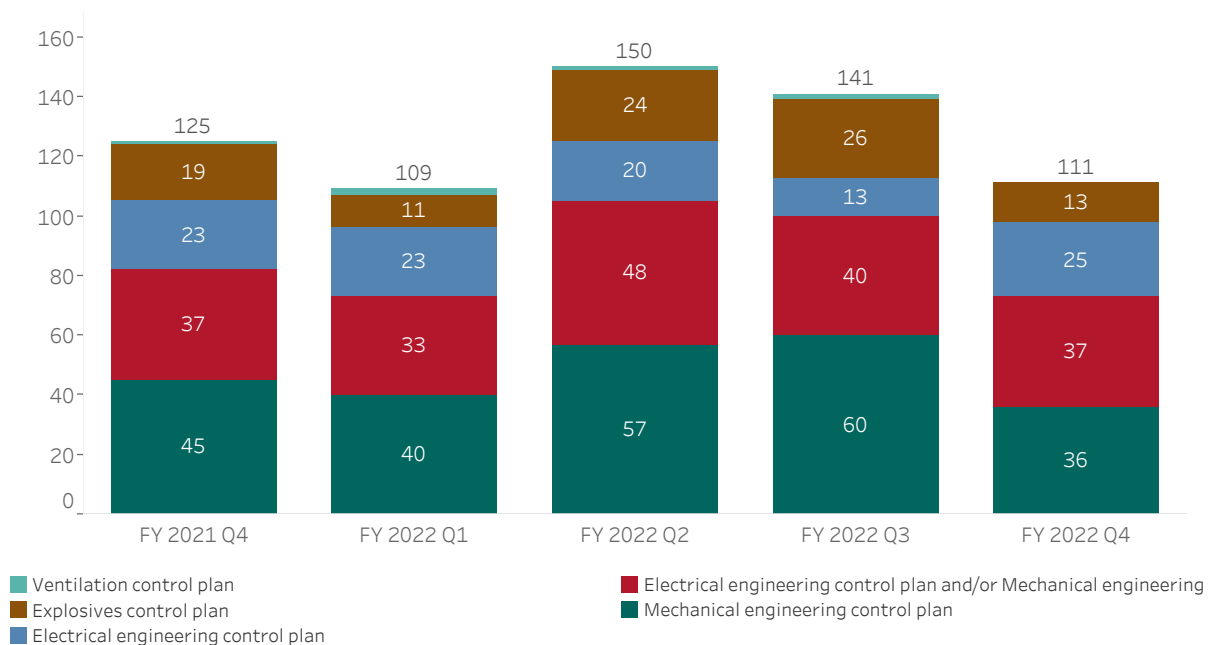
Principal control plans

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 PLANS - APRIL TO JUNE 2022



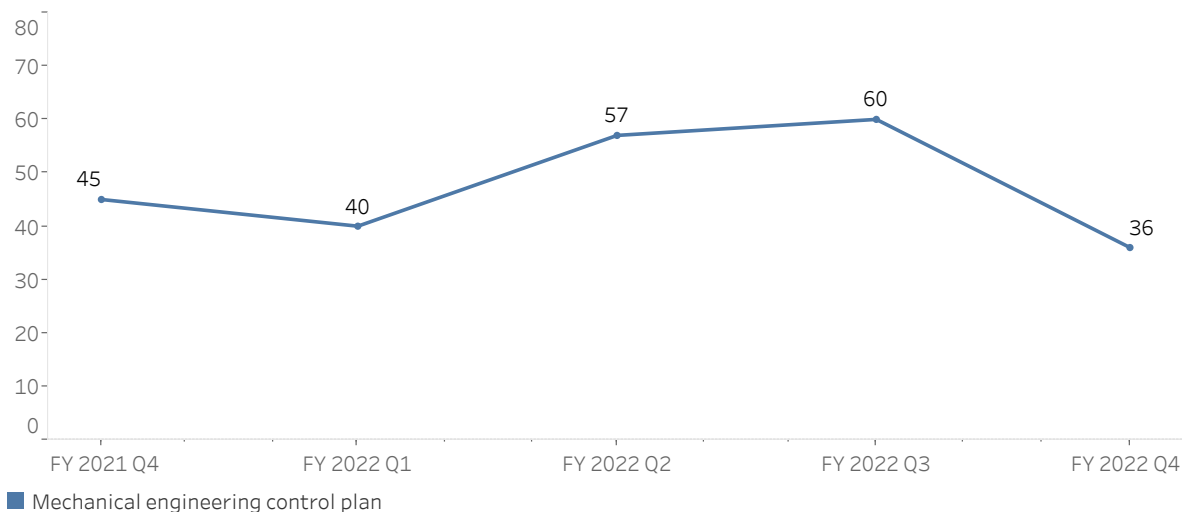


Mechanical engineering control plan



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 MECHANICAL ENGINEERING CONTROL PLANS - APRIL TO JUNE 2022



SERIOUS INJURY - RELEASE OF PRESSURE

Two workers sustained serious injuries when high pressure air unexpectedly escaped from a compressed air pipe in the vicinity of where they were working.

Comments to industry

An investigation has commenced. Refer to [IIR22-01 Two mine workers injured during pipe installation work](#).

DANGEROUS INCIDENT - UNPLANNED CONVEYOR MOVEMENT

A conveyor belt moved approximately 300 mm when a splice clamp was released. The movement caused the conveyor lifters to topple over near where a roller change was being carried out. The belt was isolated at the time of the incident and the counterweight was on the deck. There were no injuries.

Below: Lifters caught under the belt.



Comments to industry

Safe systems of work for people dealing with plant or structures must include the isolation, dissipation of energy and control of all mechanical energy sources from plant or structures.

DANGEROUS INCIDENT - PLUG EJECTED UNDER PRESSURE

A mechanical technician removed a plug from the right-hand rear strut of a dump truck believing it was a grease port. The plug was tapped into the chamber of the strut and the technician was using a hand ratchet and socket. The plug was forced out under pressure (approximately 170-200 psi). The technician was just outside the direct line of fire of the plug and was covered in fluid from the strut. The plug was found on the ground a couple of metres away from the technician.

Below: Close up of the ejected plug.



Comments to industry

Workers who are unfamiliar with a task(s) must be provided with adequate information, instructions, and supervision. Pre-task hazard assessments should include the assessment of pressurized systems and identification of controls.

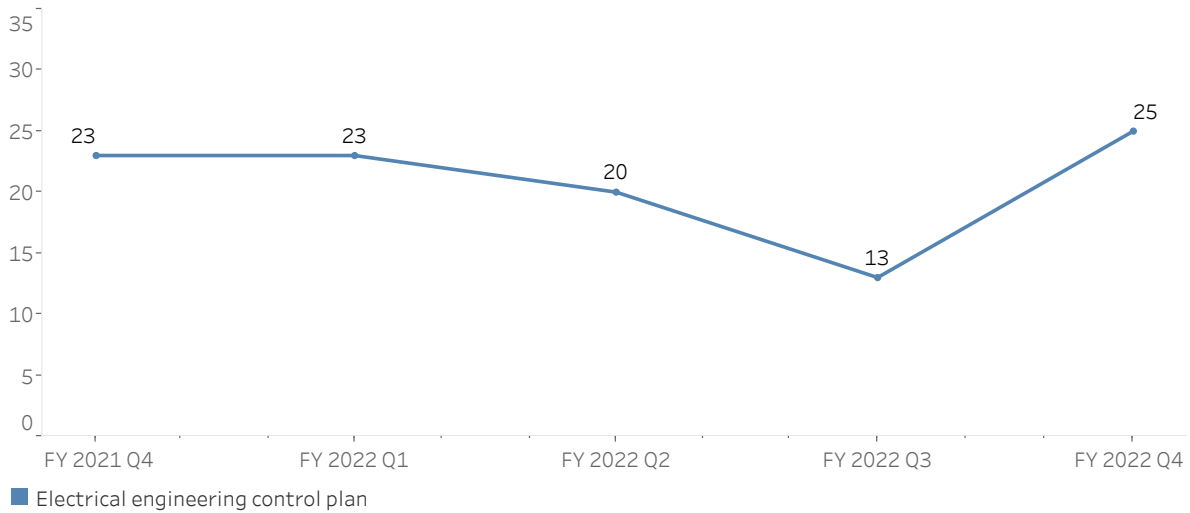


Electrical engineering control plan



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 ELECTRICAL ENGINEERING CONTROL PLANS - APRIL TO JUNE 2022

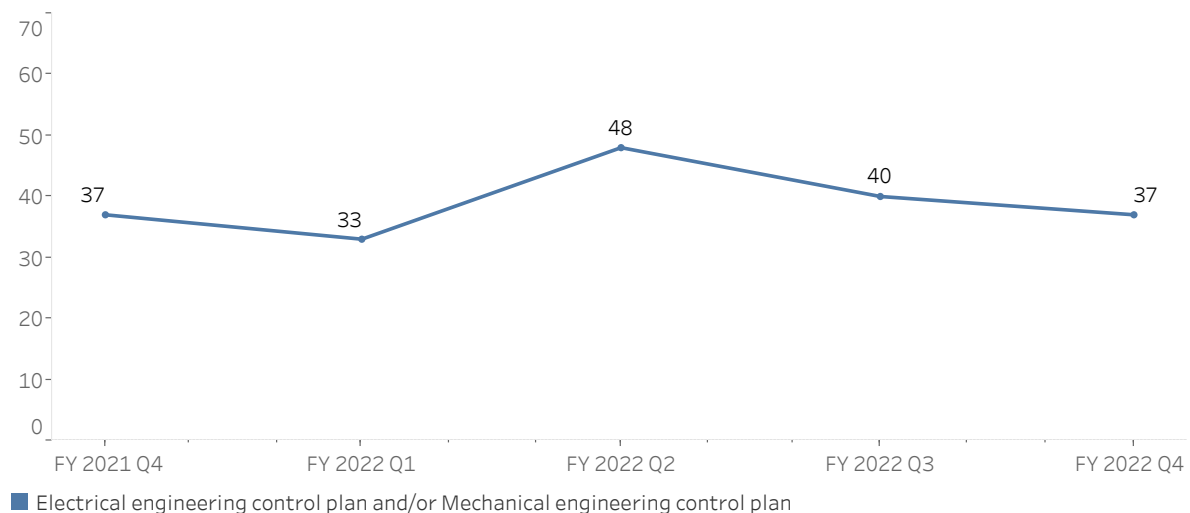


Electrical and mechanical engineering control plans



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

FIGURE 13. INCIDENT NOTIFICATIONS RELATED TO THE ELECTRICAL AND/OR MECHANICAL ENGINEERING CONTROL PLANS - APRIL TO JUNE 2022



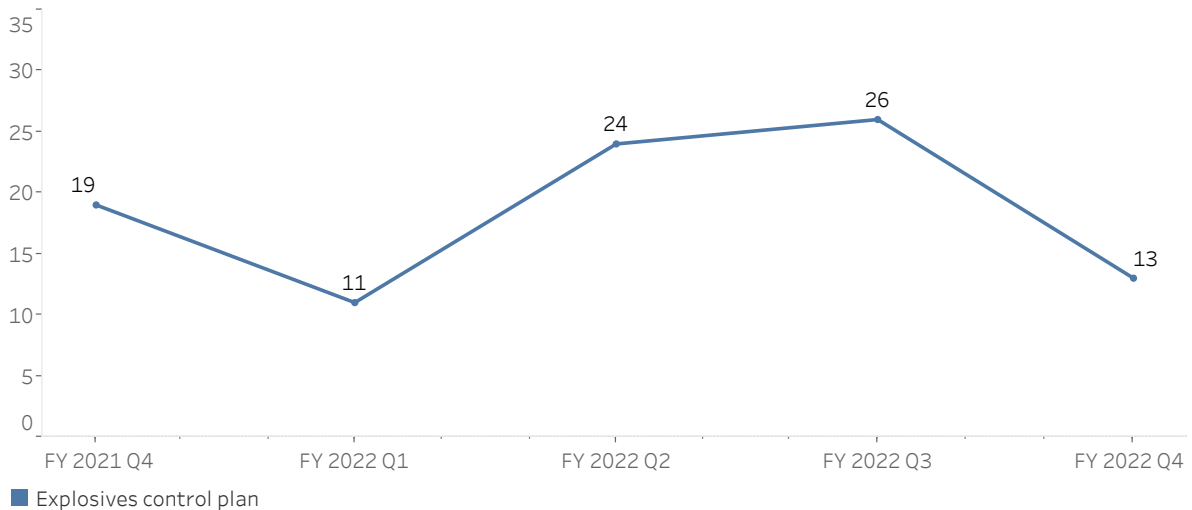


Explosives control plan



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’ and misfire events.

FIGURE 14. INCIDENT NOTIFICATIONS RELATED TO EXPLOSIVES CONTROL PLANS - APRIL TO JUNE 2022



DANGEROUS INCIDENT - UNEXPECTED DETONATOR INITIATION

A development face and a stope were loaded for firing in an underground metalliferous mine using electronic detonators. The system was set up to fire both shots simultaneously, however there was a communication issue and the system would not initiate. The development shotfirer went to the development face and replaced the electronic detonators with electric detonators. The stope detonators were not disconnected. The development shot was fired using the conventional 240 volt firing line in the mine. The development face fired as expected but the stope partially initiated. This was not expected and should not have occurred. No one was injured.

Comments to industry

A causal investigation has commenced. Refer to [IIR22-02 Unplanned initiation of explosives at Peak Gold Mine](#).



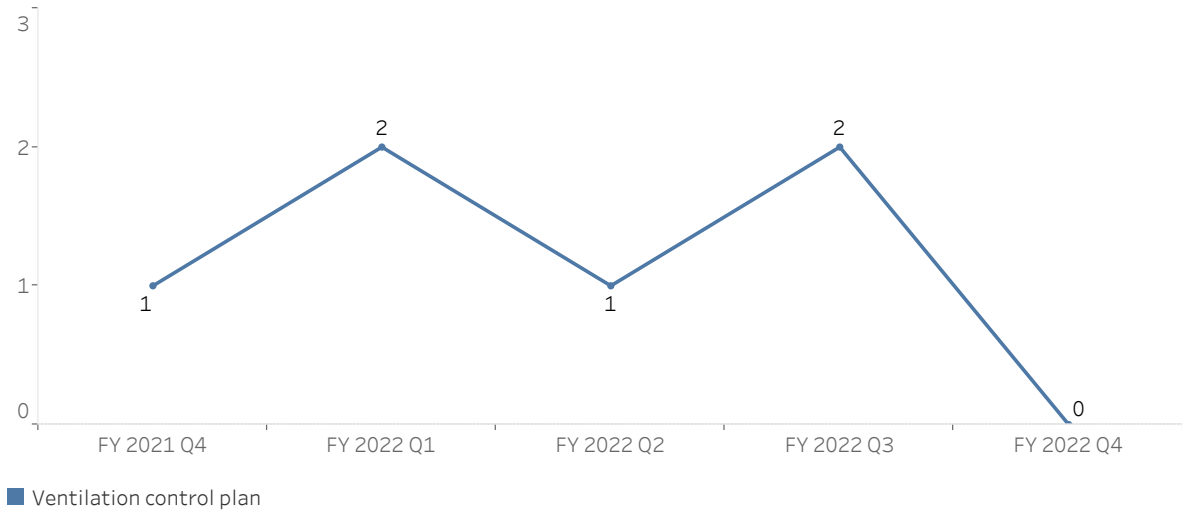


Ventilation control plan



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 - APRIL TO JUNE 2022



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

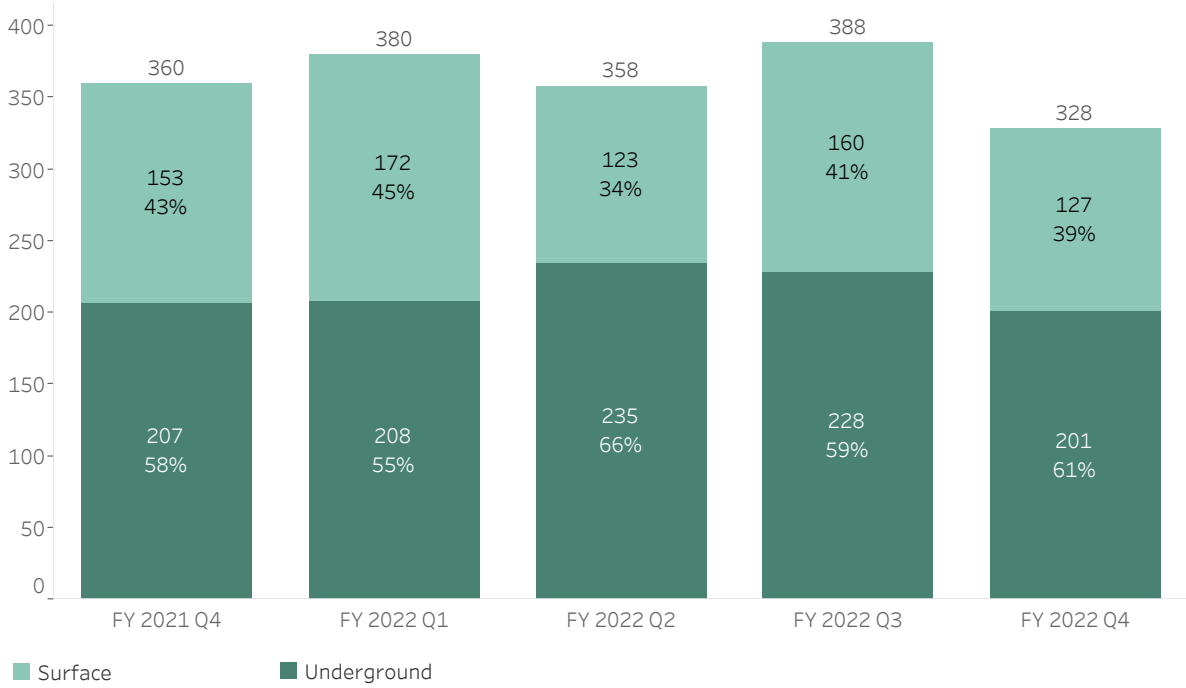
Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector-specific reporting trends.

TABLE 2. COAL SECTOR INCIDENT NOTIFICATION RECEIVED RATES - APRIL 2021 TO JUNE 2022

MEASURE	FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Incidents	360	380	358	388	328
Active mines	118	117	119	119	120
Incident rate per active mine	3.05	3.25	3.01	3.26	2.73
Mines that notified incidents	48	54	51	50	48
% of mines notifying an incident	41%	46%	43%	42%	40%
Incident rate per notifying mine	7.50	7.04	7.02	7.76	6.83

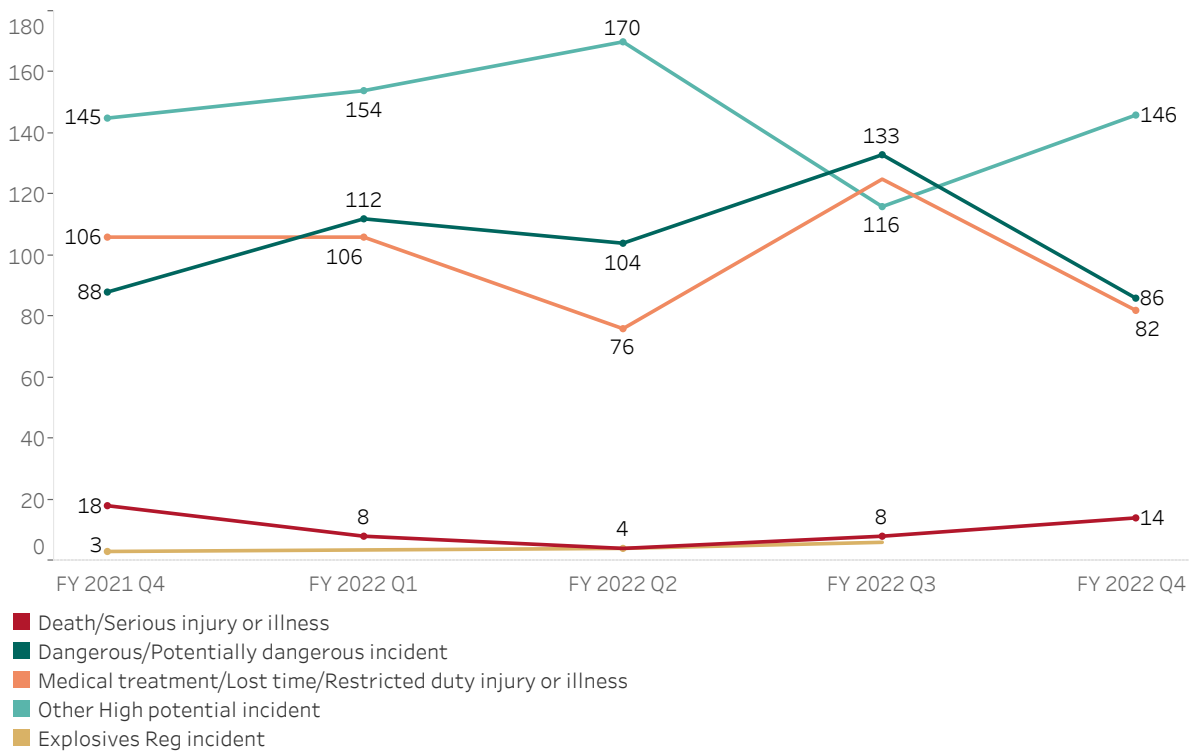
The following graph shows the proportion of safety incident notifications received from surface and underground coal operations. This quarter there was a decrease in the number of incidents notified across both underground and surface coal operations.

FIGURE 16. COAL SECTOR INCIDENT NOTIFICATIONS BY OPERATION TYPE - APRIL 2021 TO JUNE 2022



The graph below presents a breakdown of safety incidents notified to the Regulator by the coal sector by the requirement to report. While this quarter saw a small increase in notifications of serious injuries and other high potential incidents, decreases were observed across the other breakdown categories.

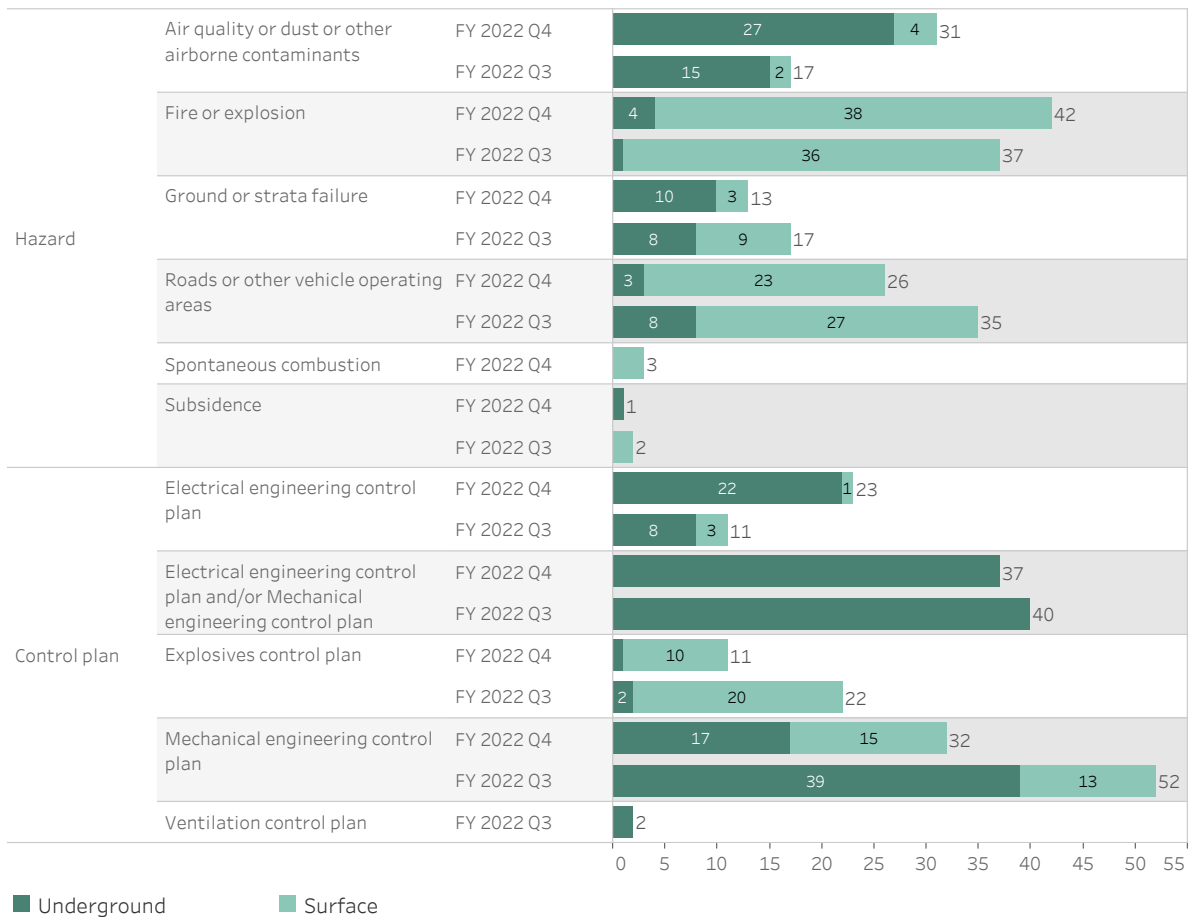
FIGURE 17. COAL SECTOR INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT - APRIL 2021 TO JUNE 2022



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 - JANUARY 2022 TO JUNE 2022



Large mines sector

Incident notifications

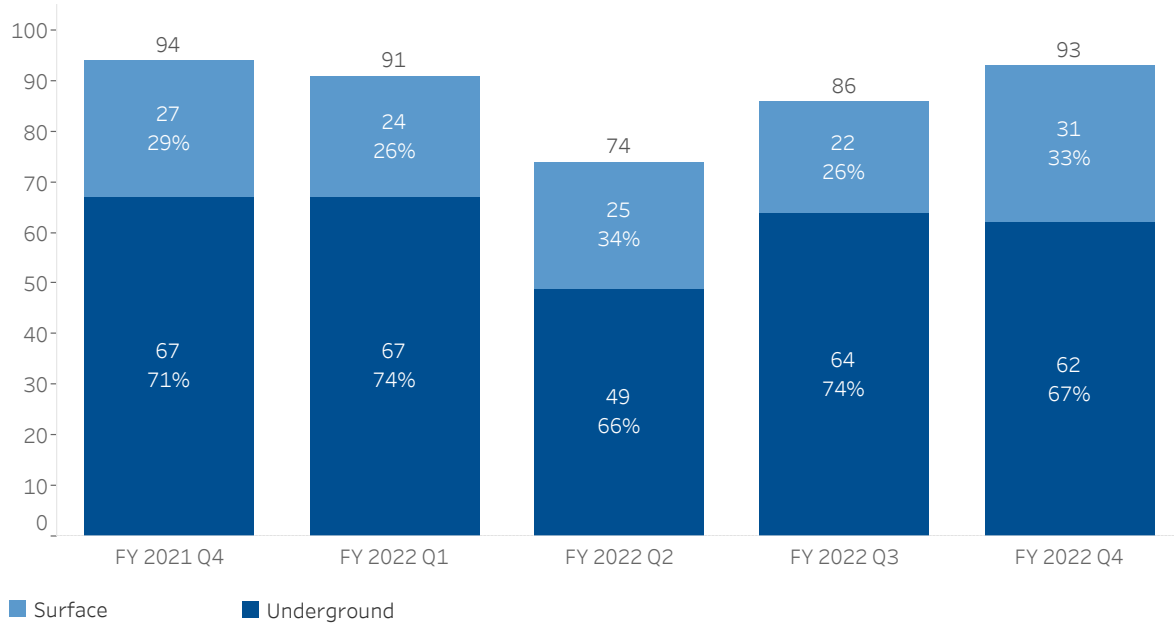
Under work health and safety legislation, mine operators must notify the regulator about the occurrence of certain types of safety incidents. Incident notification data (by active mine) provides insights into sector specific reporting trends.

TABLE 3. LARGE MINES AND QUARRIES SECTOR INCIDENT NOTIFICATIONS RECEIVED RATES - APRIL 2021 TO JUNE 2022

MEASURE	FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Incidents	94	91	74	86	93
Active mines	62	59	59	58	58
Incident rate per active mine	1.52	1.54	1.25	1.48	1.60
Mines that notified incidents	28	27	24	24	29
% of mines notifying an incident	45%	46%	41%	41%	50%
Incident rate per notifying mine	3.36	3.37	3.08	3.58	3.21

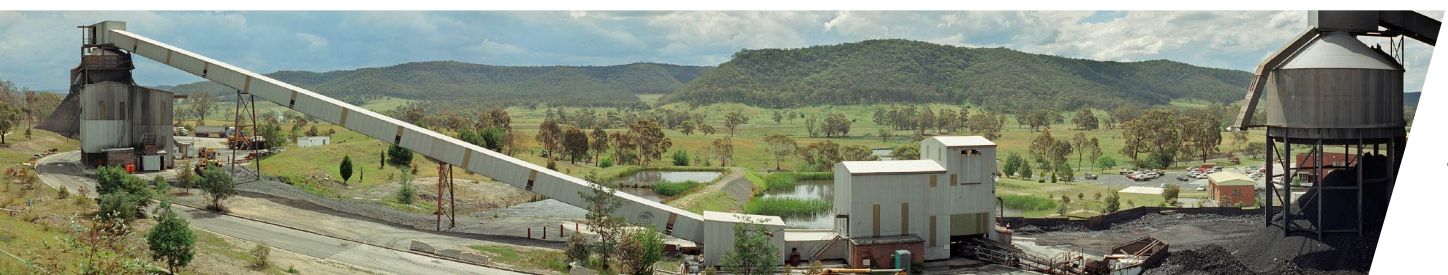
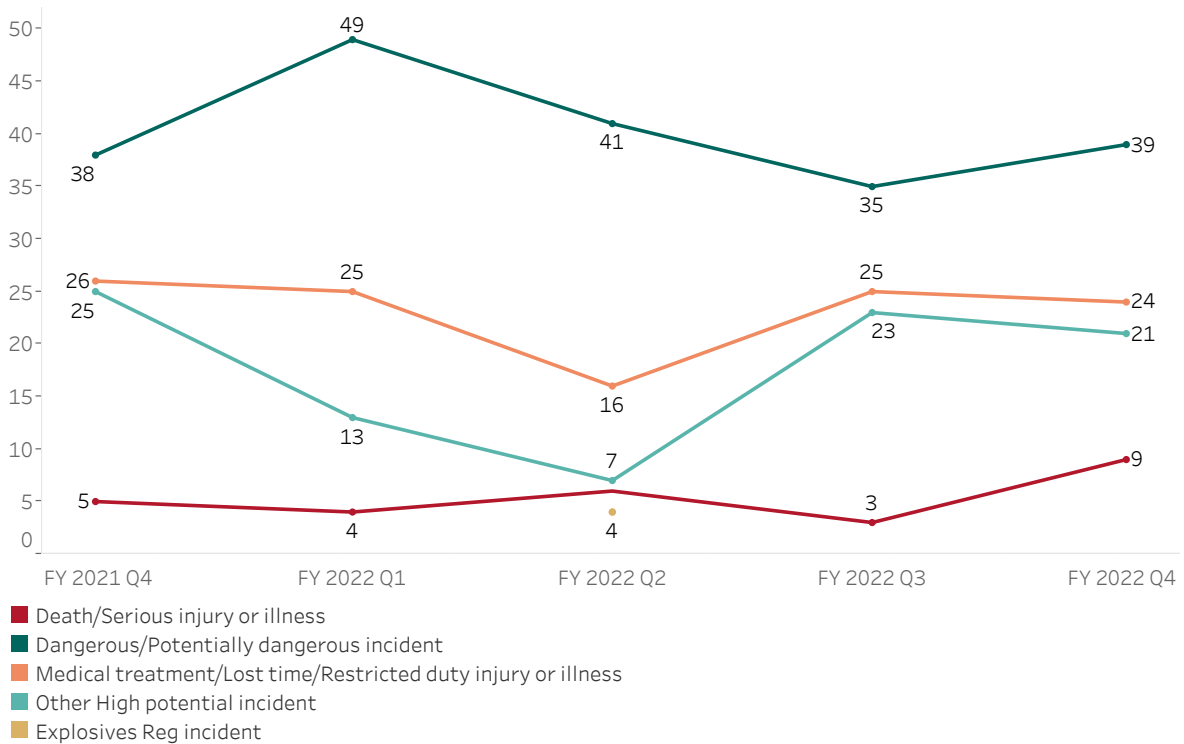
The following graph shows the proportion of safety incident notifications received from large mines and quarries by operation types.

FIGURE 19. LARGE MINES AND QUARRIES INCIDENT NOTIFICATIONS BY OPERATION TYPE - APRIL 2021 TO JUNE 2022



The following graph presents a breakdown of safety incidents notified to the Regulator by the large mines and quarries sector based on the requirement to report under the safety legislation. An increase in serious injuries is noted for this quarter. A review was conducted and did not identify any common contributing factors. A small increase in ‘dangerous’ and ‘potentially dangerous’ incidents was also observed this quarter. Numbers of ‘other high potential’ incidents remain high but have dropped compared to the previous quarter.

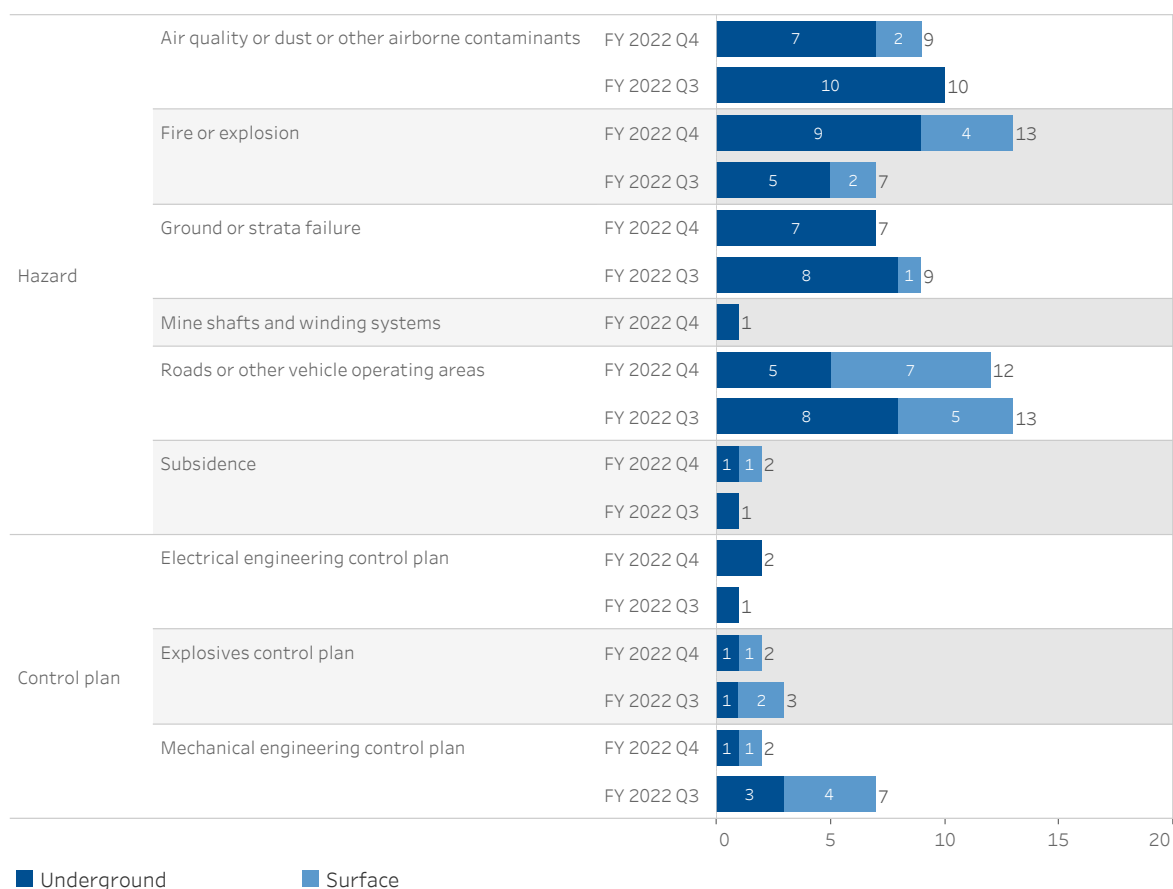
FIGURE 20. LARGE MINES AND QUARRIES INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT - APRIL 2021 TO JUNE 2022



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 hazards associated with fire or explosion and roads or other vehicle operating areas.

FIGURE 21. LARGE MINES AND QUARRIES INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE - JANUARY 2022 TO JUNE 2022



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 - APRIL 2021 TO JUNE 2022

MEASURE	FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Incidents	24	24	23	19	23
Active mines	2,588	2,591	2,592	2,591	2,589
Incident rate per active mine	0.01	0.01	0.01	0.01	0.01
Mines that notified incidents	22	20	22	18	20
% of mines notifying an incident	0.85%	0.77%	0.85%	0.69%	0.77%
Incident rate per notifying mine	1.09	1.20	1.05	1.06	1.15

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

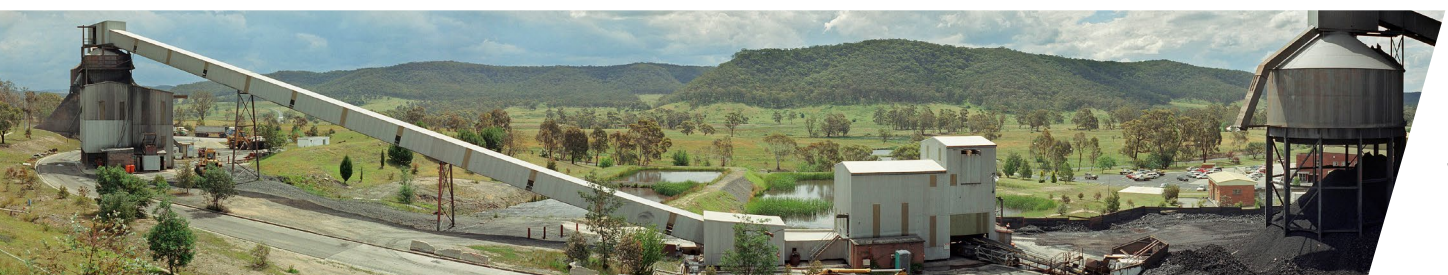
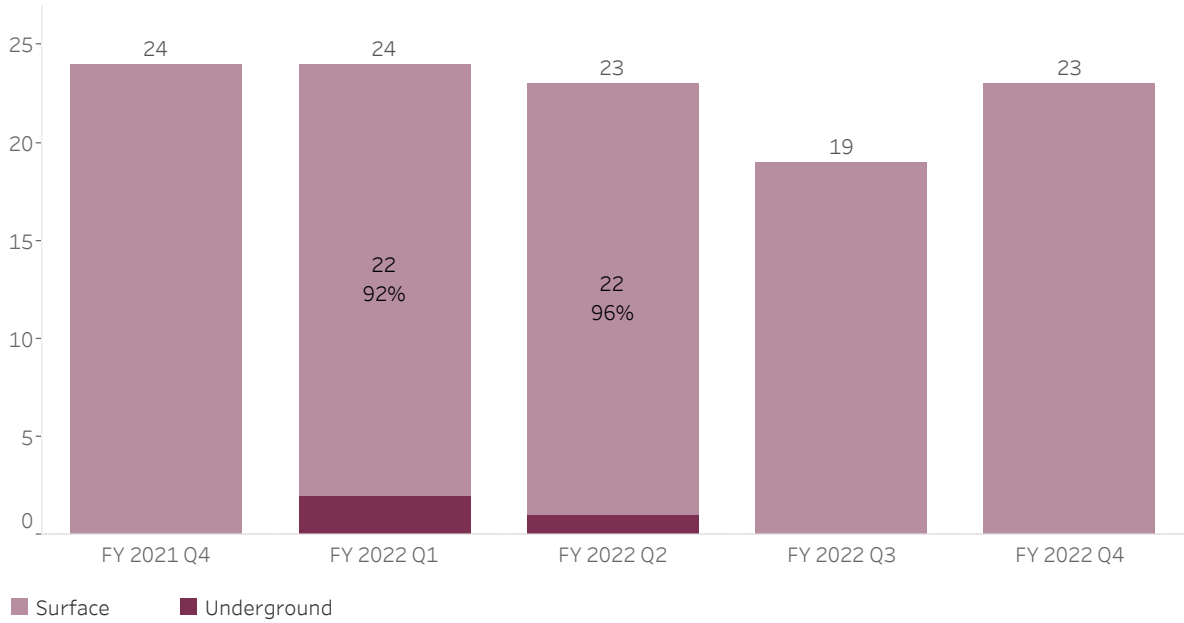
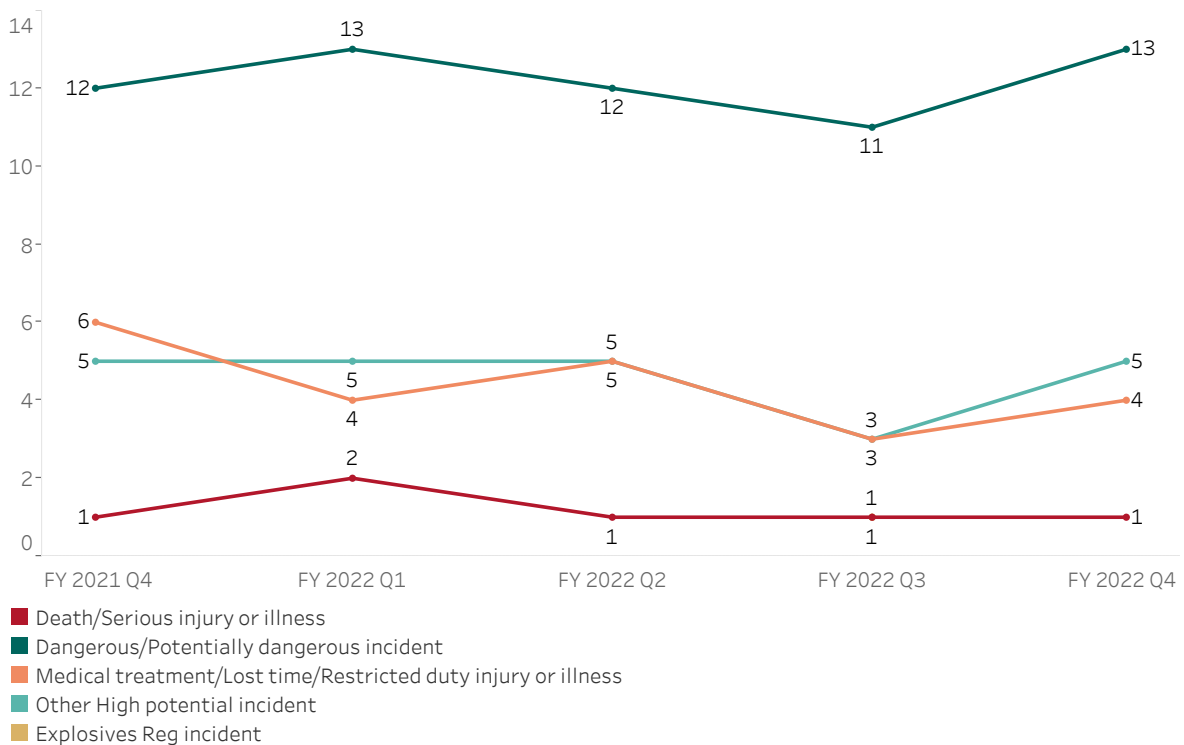


FIGURE 22. SMALL MINES AND QUARRIES INCIDENT NOTIFICATIONS BY OPERATION TYPE - APRIL 2021 TO JUNE 2022



The graph below presents a breakdown of safety incidents notified to the Regulator by the small mines and quarries sector by the requirement to report. This quarter saw an increase in ‘dangerous and potentially dangerous’ incidents. Comparatively, the number of incidents notified by the sector is substantially lower than what is reported by the coal and large mines sector.

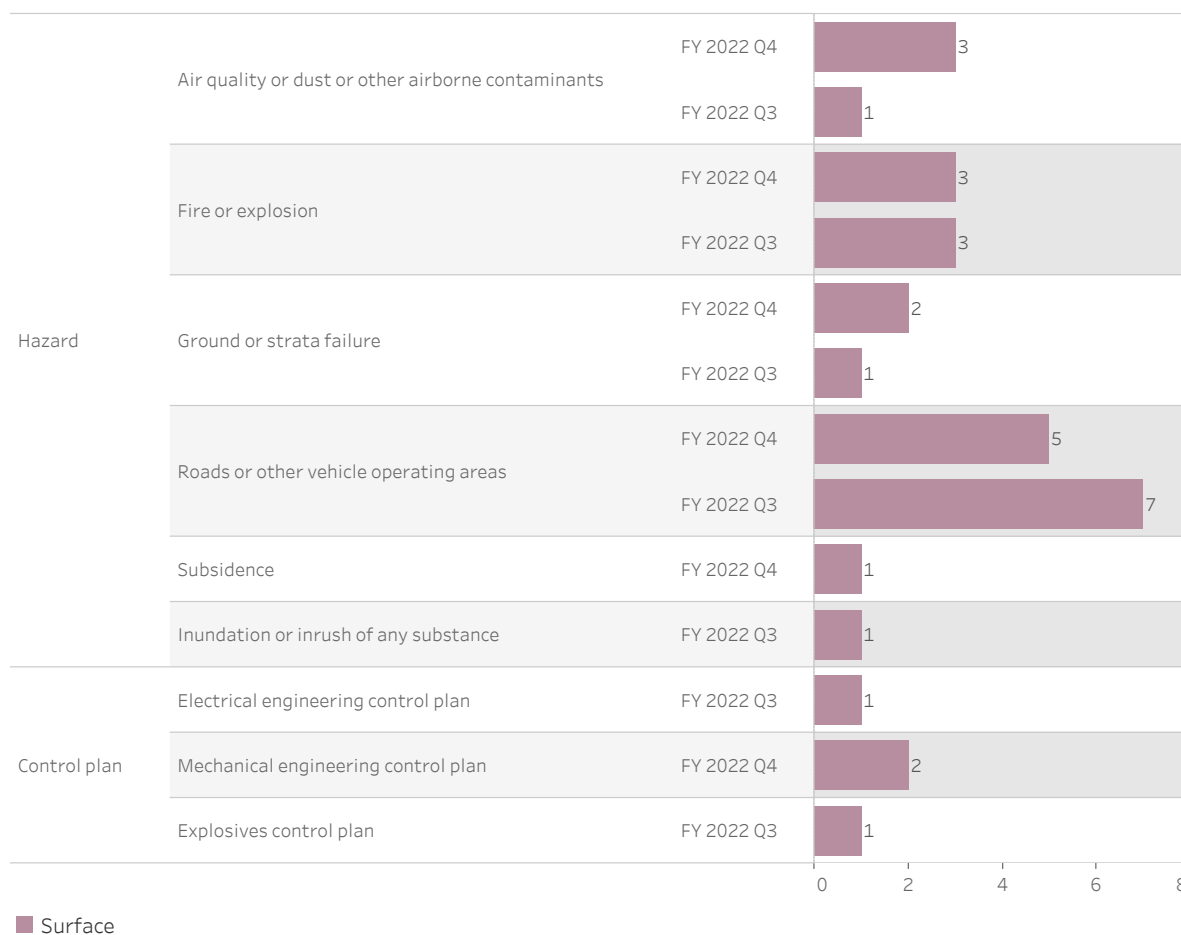
FIGURE 23. SMALL MINES AND QUARRIES INCIDENT NOTIFICATIONS RECEIVED BY REQUIREMENT TO REPORT - APRIL 2021 TO JUNE 2022



Incident notifications by principal hazard

The figure below shows the number of incident notifications received from the small 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 and quarry operators need to ensure their risk management controls remain fully effective – this includes controls for managing hazards associated with airborne contaminants /dust and roads or other vehicle operating areas.

FIGURE 24. SMALL MINES AND QUARRIES INCIDENTS CLASSIFIED BY PRINCIPAL HAZARD BY OPERATION TYPE - JANUARY 2022 TO JUNE 2022



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 EXPLORATION SITES INCIDENT NOTIFICATIONS - APRIL 2021 TO JUNE 2022

SECTOR	MEASURE	FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Petroleum and geothermal sites*	Incidents	0	0	0	0	0
Opal mines	Incidents	0	0	0	0	2
Explorations sites**	Incidents	1	1	0	5	0

* includes exploration

** excludes petroleum and geothermal

TABLE 6. OPAL MINES AND EXPLORATION SITES INCIDENT NOTIFICATIONS BY REQUIREMENT TO REPORT - APRIL 2021 TO JUNE 2022

SECTOR	REQUIREMENT TO REPORT MEASURE	FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Opal mines	Dangerous/potentially dangerous incident	0	0	0	0	2
	Death/serious injury or illness	1	1	0	0	0
Exploration sites	Dangerous/potentially dangerous incident	0	0	0	1	0
	Medical treatment/lost time/restricted duty injury or illness	0	0	0	4	0
TOTAL		1	1	0	5	0

TABLE 7. OPAL MINES AND EXPLORATION SITES INCIDENT NOTIFICATIONS BY PRINCIPAL HAZARD - APRIL 2021 TO JUNE 2022

SECTOR	CLAUSE PH/PCP MAPPING	FY 2021 Q4	FY 2022 Q1	FY 2022 Q2	FY 2022 Q3	FY 2022 Q4
Opal mines	Inundation or inrush of any substance	0	0	0	0	1
	Roads or other vehicle operating areas	0	0	0	0	1
	Total	0	0	0	0	2
Exploration sites	Mechanical engineering control plan	0	0	0	0	1
	No related principal mining hazard or principal control plan	2	1	1	0	4
	Total	2	1	1	0	5

Compliance and enforcement

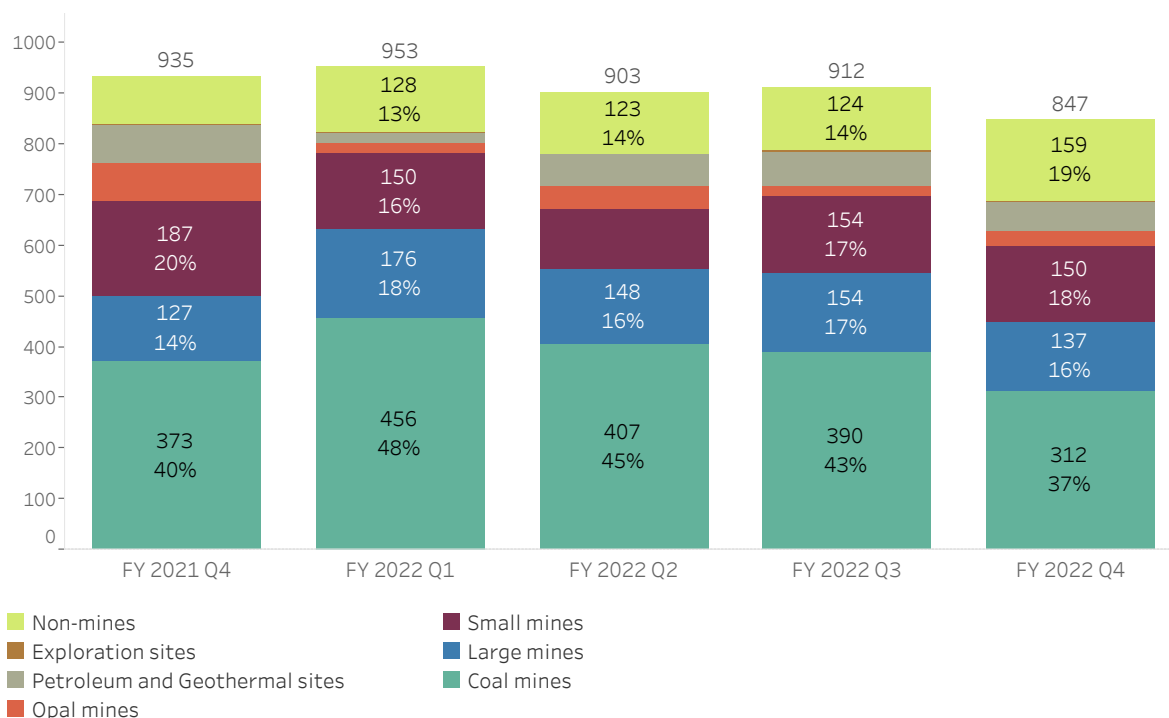
The Regulator uses a range of tools to promote and secure compliance in mines and petroleum sites in relation to work health and safety legislation. These include desktop assessments, site inspections, investigations and enforcement actions, such as issuing notices and commencing prosecutions.

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

Safety assessments by sector

This quarter saw an overall small decrease in the number of assessments after a negligible rise in the previous quarter. The previously observed quarter-on-quarter increases in the small mines sector had been driven by multiple assessments being undertaken during a single inspection.

FIGURE 25. SAFETY ASSESSMENTS BY SECTOR - APRIL 2021 TO JUNE 2022

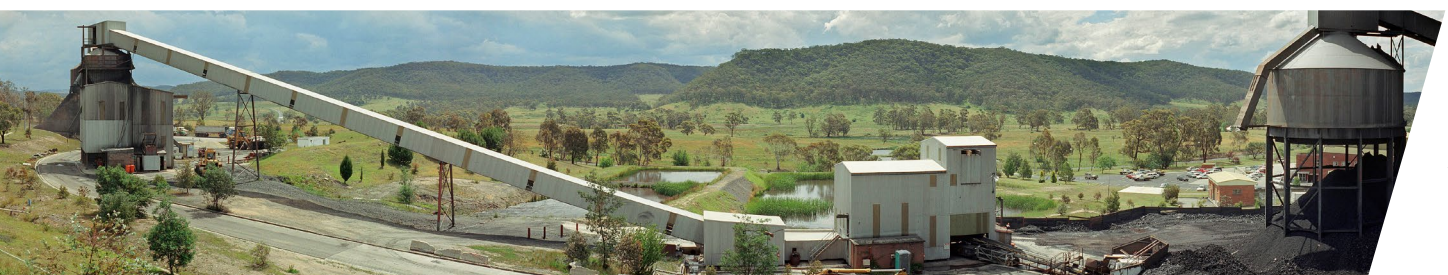
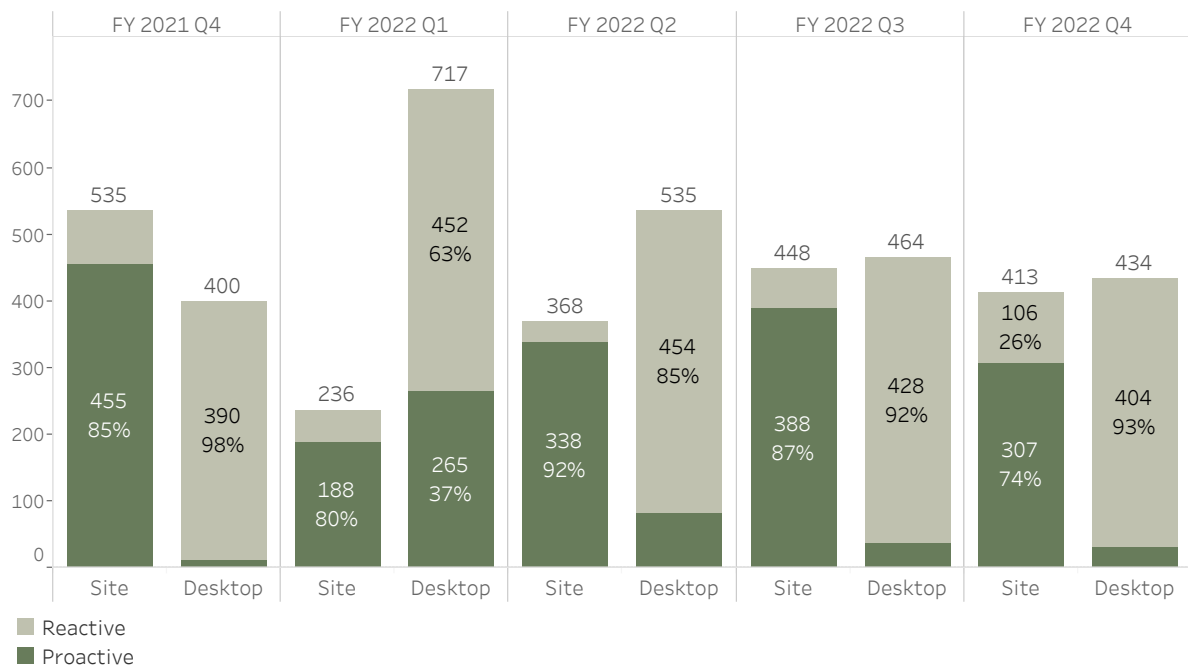


Safety assessments by category and nature

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.

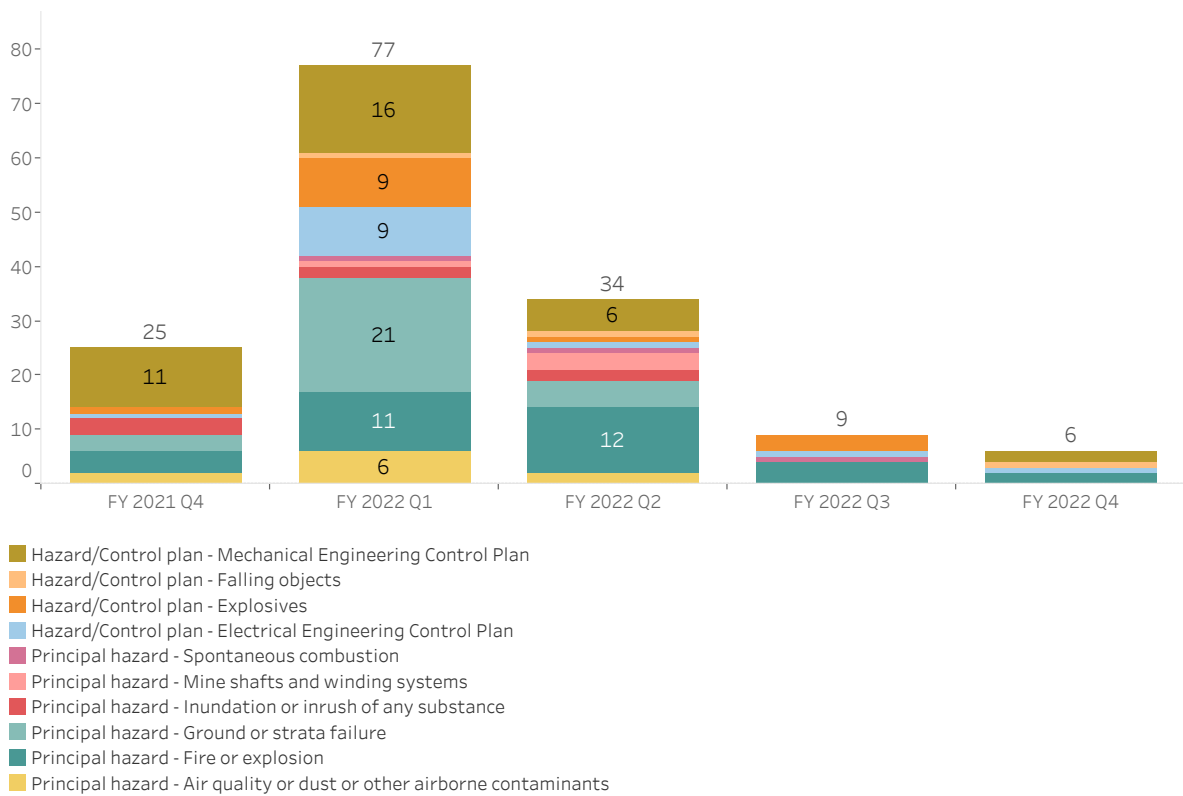
FIGURE 26. SAFETY ASSESSMENTS BY CATEGORY AND NATURE - APRIL 2021 TO JUNE 2022



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.

FIGURE 27. TARGETED ASSESSMENTS BY PRINCIPAL HAZARD, HAZARD/CONTROL PLAN AND OTHER - APRIL 2021 TO JUNE 2022

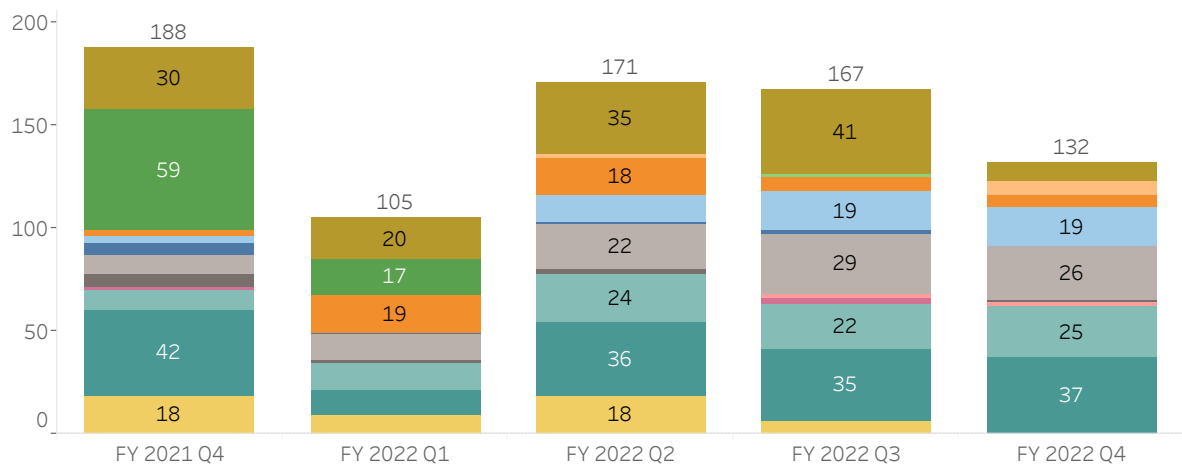


Planned inspections

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 AND HAZARD/CONTROL PLANS - APRIL 2021 TO JUNE 2022

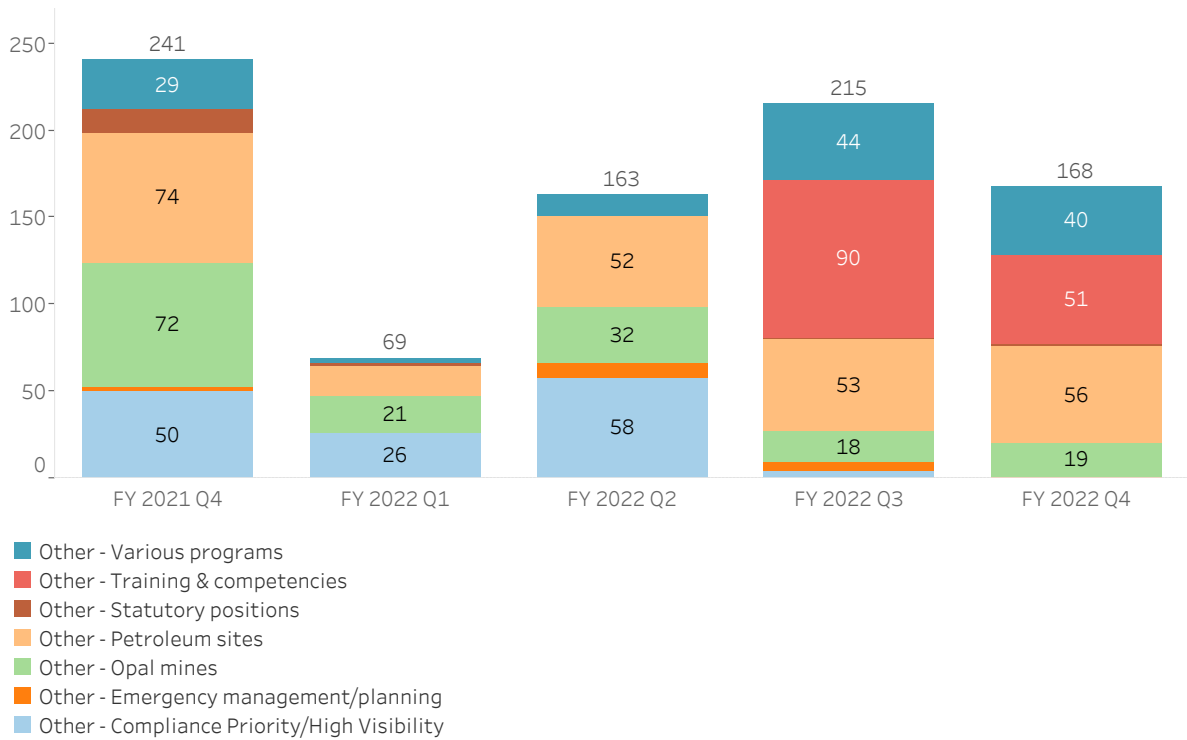


- Hazard/Control plan - Mechanical Engineering Control Plan
- Hazard/Control plan - Heat stress
- Hazard/Control plan - Hazardous chemicals
- Hazard/Control plan - Falling objects
- Hazard/Control plan - Explosives
- Hazard/Control plan - Electrical Engineering Control Plan
- Hazard/Control plan - Dams, Tailings, Emplacements
- Principal Hazard - Small mines - Tier 2 and Tier 3 Principal Hazard Assessment
- Principal hazard - Roads or other vehicle operating areas
- Principal hazard - Mine shafts and winding systems
- Principal hazard - Spontaneous combustion
- Principal hazard - Ground or strata failure
- Principal hazard - Fire or explosion
- Principal hazard - Air quality or dust or other airborne contaminants



The graph below shows planned site inspections commenced for ‘other’ hazards.

FIGURE 29. PLANNED INSPECTIONS BY ‘OTHER’ HAZARD - APRIL 2021 TO JUNE 2022



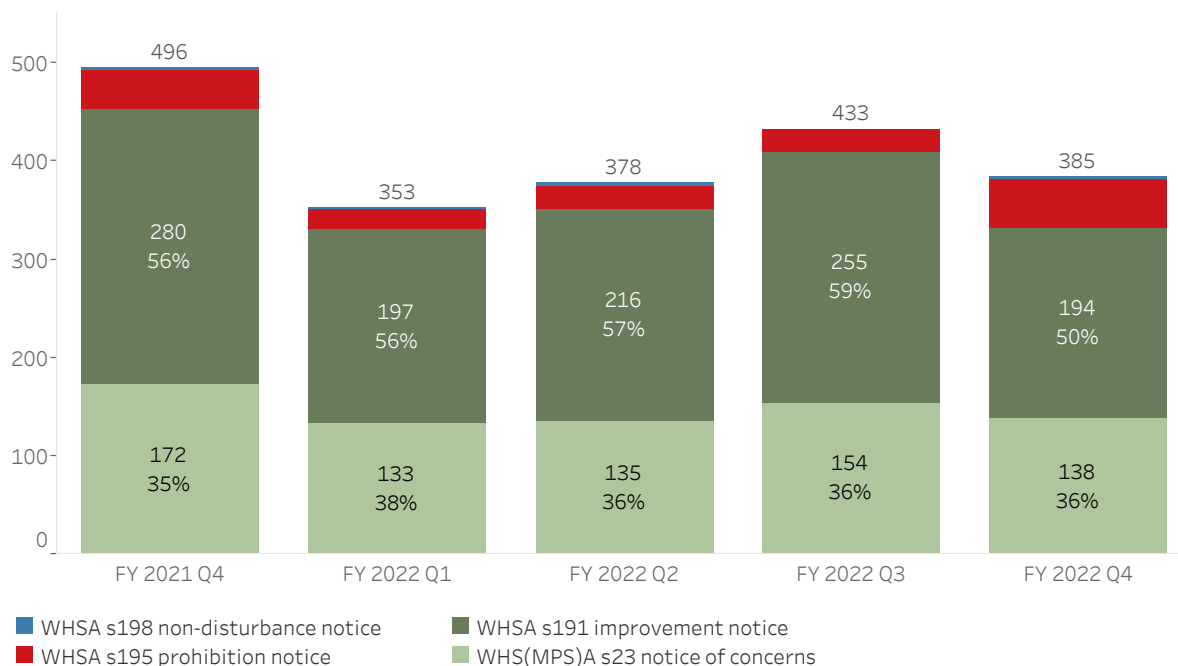
Safety notices issued

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

The following graph shows the number and types of safety notices issued during each of the five quarters since April 2021. This quarter saw a drop in the number of notices issued compared to the previous quarter.



FIGURE 30. SAFETY NOTICES ISSUED BY NOTICE TYPE - APRIL 2021 TO JUNE 2022



The proportion of safety notices issued to the large mines and quarries sector has increased this quarter, returning to figures seen in Quarters 1 and 2 of 2021-22. The proportion of proportion of safety notices issued to the coal and small and quarries mines sectors have decreased.

FIGURE 31. SAFETY NOTICES ISSUED BY SECTOR - APRIL 2021 TO JUNE 2022

