



**NSW  
Resources  
Regulator**

# Quarterly safety report

JULY TO SEPTEMBER 2019



## 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. Where-ever possible, trends and patterns have been identified.

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

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

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

## DOCUMENT CONTROL

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (October 2019). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the NSW Department of Planning, Industry and Environment or the user's independent advisor.

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# Executive summary

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This report was prepared by the NSW Resources Regulator to assist mine and petroleum site operators in meeting 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 its risk-based Incident Prevention Strategy.

As a high-hazard regulator, we focus on compliance with legislative requirements associated with the principal mining hazards and other high-risk hazards including mechanical, electrical and explosives.

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 defined by the NSW Resources Regulator: coal, large (non-coal) mines and quarries, small mines and quarries (including gemstones), opal mines, petroleum and geothermal sites, and exploration sites.

This report provides information on significant mining events in Australia and globally, summarises safety incident notifications, compliance activities and outcomes for the current quarter, that is quarter one in the financial year 2019-20 (FY 2020 Q1). This report covers a 15-month period from July 2018 to September 2019 for selected measures.

There was one mining-related fatal injury in NSW between July and September 2019.

In the current quarter, the NSW Resources Regulator received 561 safety incident notifications. This represents an increase of 17% compared to the same period a year before. However, incident rates (notified incidents per active mine) have remained relatively stable during the past 15 months. Most safety incident notifications received in the current quarter (68%) relate to high potential incidents. A further 20% relate to dangerous incidents. A clear majority of safety incident notifications received in the quarter (79%; 444 of 561) were from coal mines.

Of the 561 safety incidents notifications received in the current quarter (FY 2020 Q1), approximately 30% related to work environment, 17% were vehicle or plant incidents and 11% related to key system failure.

The NSW Resources Regulator completed 869 safety assessments during the current quarter. Almost half of these (426 of 869) were undertaken in the coal sector, which shows that the coal sector continues to be a priority for the NSW Resources Regulator safety assessments program.

The NSW Resources Regulator conducted, on average, 352 proactive assessments (activities not related to incidents and complaints) each quarter over the past five quarters which represents approximately 45%, on average, of all assessments. For the same period, on average, 401 site assessments (activities conducted on site) were conducted each quarter which represents approximately 51%, on average, of all assessments.

For the current quarter, 13 targeted assessment programs were conducted by teams of inspectors of various disciplines, focusing on the hazards of 'roads or other vehicle operating areas', 'ground and strata failure', and 'fatigue'. These targeted assessment programs were conducted across the coal, large mines, and small mines sectors, and encompassed both open cut and underground operations.

From July 2019 through September 2019, the NSW Resources Regulator completed 287 planned inspections, each focusing on a specific hazard at a mine site. In the coal sector, the focus was on the hazard 'roads or other vehicle operating areas'. For large mines and quarries sector planned inspections focused on 'fatigue' and in the small mines and quarries sector the hazard focus was on 'fire or explosion' and 'air quality or dust'. These targeted assessments follow a pre-prepared plan focusing on a specific hazard including principal mining control plans.

There were 517 safety notices issued across all sectors in NSW during the current quarter. Of these notices, 62% (322 of 517) were improvement notices and 13% (67 of 517) were prohibition notices. This equates to an average of one prohibition notice issued for approximately, every five improvement notices.

The number of safety notices issued during the five quarters does vary but has reduced since the previous quarter. However, this still represents a significant increase of 26% when compared to the same quarter from financial year 2018-2019 (411 in the same quarter previous year, 517 in the current quarter).

Since July 2019, the NSW Resources Regulator has focused on the following safety issues:

- hazards related to heavy and light vehicle interactions
- roads and other vehicle hazards in the coal sector,
- collapse or subsidence of mine fill at underground metalliferous mines
- worker dust risks at quarries in response to concerns around exposure exceedances and lack of reporting in the small mines and quarries sector.

This report provides information for industry on each of these safety issues.



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# National and international significant events

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The NSW Resources Regulator is committed to sharing safety information about significant mining related events and fatalities with a view to increasing industry awareness about mine safety and regulatory matters. This list is not exhaustive, but represents information gathered as part of the NSW Resources Regulator's ongoing publication monitoring process. Fatalities and significant events from July to September 2019, have been included.

The criteria for selecting articles is their relevance to equipment and processes commonly used across the NSW mining industry.

## Australia

### FATAL INJURIES

#### New South Wales

For this quarter, between July and September 2019, there was one fatal injury recorded in the NSW mining industry, which occurred on 12 August 2019.

A worker suffered fatal injuries arising from a collision between a dozer and a light vehicle at the Snapper Mineral Sands Mine. This incident is currently under investigation.

Further details are available in [Investigation information release IIR19-11](#)

#### Queensland

There was one fatal injury reported in this quarter, regarding an incident that occurred on 13 August 2019.

An operator was fatally injured when he became entangled between the movable part of an excavator's access ladder and the wall of the engine room.

Further details are available in [Mine Safety alert no.366](#)

#### Western Australia

There was one fatal injury in this quarter, regarding an incident that occurred on 11 September 2019.

The mechanism used to open and close a tarpaulin cover on a triple road train trailer failed while a truck driver was in the process of closing the cover.

Further information is available in [Serious incident report no.278](#)

### DANGEROUS INCIDENTS

#### New South Wales

For this quarter, six dangerous incidents of note were published as safety bulletins on the Resources Regulator's website.

**TABLE 1.** NSW RESOURCES REGULATOR SAFETY ALERTS AND BULLETINS

Date published	Reference	Title
17 July 2019	SB19-05	<a href="#">Objects entering cabins of underground mobile plant</a>
17 July 2019	SB19-06	<a href="#">Safety critical system failures on road registered vehicles</a>
1 August 2019	SB19-07	<a href="#">Configuration of work baskets</a>
1 August 2019	SB19-08	<a href="#">Brake coupling disintegrates, ejecting components</a>
5 August 2019	SA19-03	<a href="#">Flight bar ejects hitting worker while installing a conveyor chain</a>
14 August 2019	SB19-09	<a href="#">Lack of bunding on accessible edges</a>

## OTHER STATES

### Queensland

In this quarter, three dangerous incidents of note were published in Queensland:

- In July 2019, an apprentice diesel mechanic became trapped between the rear of the incline conveyor and the chassis rail of a mobile screening plant. The worker sustained serious injuries requiring medivac and hospitalisation.  
See [Mine safety alert no.365](#)
- In August 2019, A mine worker received burns to their neck and arm, following a flash fire, while preparing to fix a fuel tank on a loader. The loader was fitted with dual diesel fuel tanks on each side of the rear, which were both integrated into the sub-frame. The two tanks were interconnected by a bottom feeder line and a top breather line.  
See [Mine safety alert no.367](#)
- In August 2019, an inrush occurred when workers were developing a roadway connecting a ventilation shaft to the underground workings. When the roadway broke through into the shaft, a quantity of mud and water still contained in the shaft flowed into the roadway. The face workers retreated from the area without injury.  
See [Mine safety alert no.368](#)



# New Zealand

## DANGEROUS INCIDENTS

In New Zealand, six dangerous incidents of note were published in this quarter:

- A safety alert published in July 2019 reported a dangerous incident, that while blasting in a limestone operation, a rock was projected beyond the blast exclusion zone of 100 metres, striking the roof of a ute parked 120 metres from the blast site. There was minor damage to the ute. Workers were standing in the vicinity of the ute, some 20 metres (approximately) away. See [Safety alert](#)
- A safety alert published in July 2019 reported a dangerous incident where a subcontractor was performing splicing of a conveyor belt (joining the belt with pressure and heat) on a mobile crushing plant a clamping bolt on the vulcaniser failed and part of the vulcaniser catapulted around five metres into the air. The part, weighing approximately 50kgs, landed on the back end of the contractor's van, smashing the rear window. See [Safety alert](#)
- A safety alert published in August 2019 reported a dangerous incident where a truck, with its body raised, was spreading material on a quarry haul road, when the operator misjudged the road camber and became concerned with the lean of the truck body.
- The driver tried to lower the hoist to reduce the lean as he continued to spread metal, but the centre of gravity had changed sufficiently (to the left) to snap the mount of the lift ram and cause the truck's body to come to rest on its side against the better. No one was injured in the incident. See [Safety alert](#)
- A safety alert published in August 2019 reported a dangerous incident where a bench above an area containing a compressor and generator began fretting. On inspection, some significant cracks had appeared in the bench. The toe of the bench was immediately banded and an exclusion zone was put into place. Drainage was also installed on the bench to drain excess water from the cracks. See [Safety alert](#)
- A safety alert published in August 2019 reported a dangerous incident where an ADT loaded with rock was travelling down a quarry haul road, the truck started to accelerate. The operator applied the brake, but the ADT did not slow down. To slow the truck down, the operator drove up an embankment to his left, but this only diverted the truck back onto the haul road where it slid to the right and came to rest on a windrow. See [Safety alert](#)
- A safety alert published in September 2019 reported a dangerous incident where a hired CAT 345D excavator operating on a quarry stockpile, caught fire in the engine compartment. The speed of the fire and smoke meant that the operator had to turn off the excavator and jump clear. While no injuries were sustained, the excavator's engine compartment was damaged in the fire. See [Safety alert](#)

## United States of America

### FATAL INJURIES

In this quarter, the following nine fatal injuries occurred in the United States of America's mining sector

- On July 17, 2019, a 32-year old general manager/owner was killed when he was struck by a hydraulic breaker. The victim and the excavator operator were in the process of positioning the excavator for a motor exchange when the hydraulic breaker attachment fell off the excavator and hit the victim. See [Fatality alert](#)
- On July 31, 2019, a 62-year-old contractor with 30 years of mining experience sustained fatal injuries when three methane ignitions occurred in an air shaft. The victim and three contractors were preparing to seal the intake air shaft of an underground mine. At the time of the ignitions, the victim was trimming metal so that it would fit inside wooden forms and was in direct line of the ignition forces. See [Fatality alert](#)
- On August 2, 2019, a 39-year old contract equipment operator, with 16 years of experience, was killed while descending the main haul road in a fuel/lube truck. The victim radioed that the truck's brakes did not work and after traveling approximately one mile down a 7% grade, struck a runaway truck ramp's berm causing it to overturn. The victim was not wearing a seatbelt. See [Fatality alert](#)
- On August 7, 2019, a 42-year-old preparation plant electrician with 15 years of mining experience was electrocuted when he contacted an energized connection of a 4,160 VAC electrical circuit. The victim was in the plant's Motor Control Center (MCC) adjusting the linkage between the disconnect lever and the internal components of the 4,160 VAC panel supplying power to the plant feed belt motors. See [Fatality alert](#)
- On August 15, 2019, a 44-year-old contract electrician with 10 weeks of mining experience was electrocuted when he contacted a 120V cable while working inside a fire suppression system's electrical panel. See [Fatality alert](#)
- On August 20, 2019, a 20-year-old miner with 27 weeks of mining experience was fatally injured when he fell 40 feet down a shaft, to the concrete floor below. The victim was working with another miner, unloading a refuse kettle attached to an electric hoist, when he went over the unguarded edge of the shaft. See [Fatality alert](#)



- On August 29, 2019, a 25-year-old section foreman with 6 years of mining experience was fatally injured while exiting the longwall face. The victim was struck and covered by a portion of mine rib measuring 25 feet in length, 3 feet in depth, and 8 ½ feet in height. See [Fatality alert](#)
- On September 5, 2019, a continuous mining machine helper was fatally injured when he was struck by a battery-powered scoop. The victim was in the #3 entry behind a wing curtain that provided ventilation to the #3 right crosscut being mined. The scoop was trammed through the #3 left crosscut and struck the victim as it made a right-hand turn and passed through the wing curtain. See [Fatality alert](#)
- On September 17, 2019, an electrician was electrocuted when he contacted an energized conductor. The victim contacted a 995 VAC connector while attempting to troubleshoot the scrubber motor circuit on a continuous mining machine. See [Fatality alert](#)



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# Industry safety profile

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This industry profile is composed of a sector breakdown of the number of active mines and safety incident notifications received by the NSW Resources Regulator for the past 15 months.

## Snapshot of mines by sector

There were 7,609 active mines in NSW this quarter. Active mines include open, intermittent, mines under care and maintenance, open tourist mines, planned and small-scale titles.

Collectively, the coal and large metalliferous mines and quarries represent approximately 2% of the total number of mines (159 of 7,609) but it should be noted that it accounts for roughly 99% of the total workforce in the NSW mining industry. The small mines sector, which comprises metalliferous mines, quarries and other gemstones, represents around 35% (2,661 of 7,609). Almost half (49%) of all active mines are opal mines (3,733 of 7,609).

## Safety incident notifications

Under the *Work Health and Safety (Mine and Petroleum Sites) Act 2013*, the *Work Health and Safety (Mines and Petroleum sites) Regulation 2014*, the *Coal Industry Act 2001* and the *Explosives Regulation 2013*, mine operators are required to notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. See Appendix 1 for legislative detail.

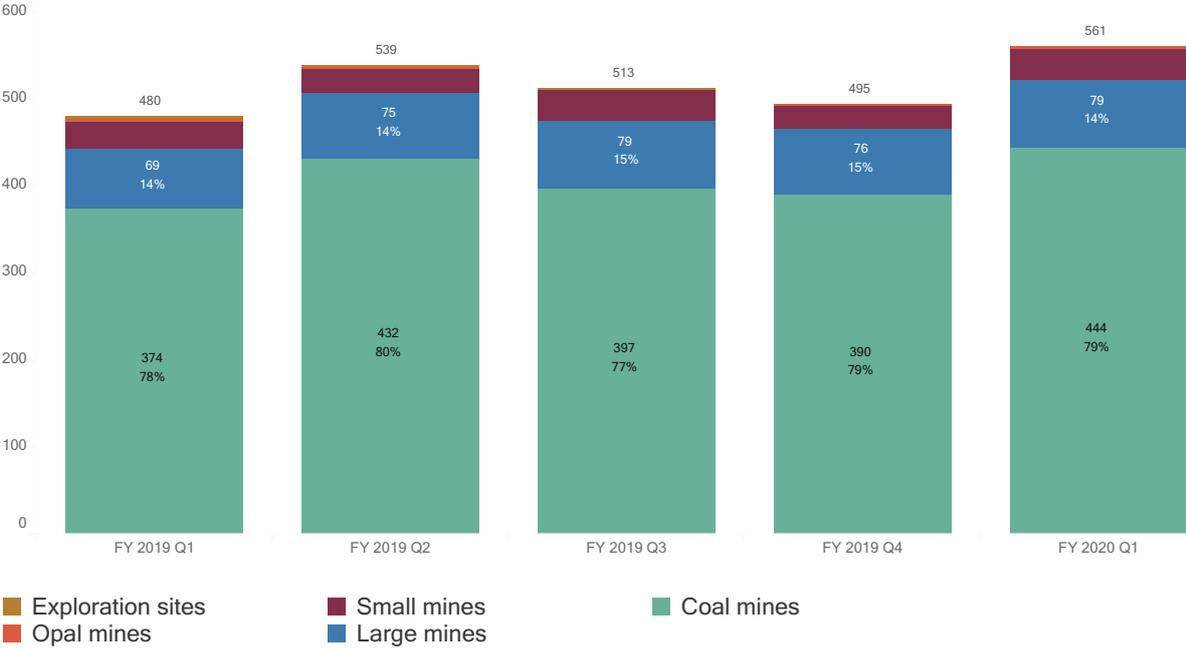
In the current July – September quarter (FY 2020 Q1), the NSW Resources Regulator received 561 safety incident notifications. This is the highest number of safety incidents reported in a single quarter across last five quarters.

As seen in the figure below, in the current quarter (FY 2020 Q1), most safety incident notifications received (79%) were from coal mines. Proportionally, notifications by sector did not vary greatly across the five quarters.

See the sector profile sections of this report for more details.



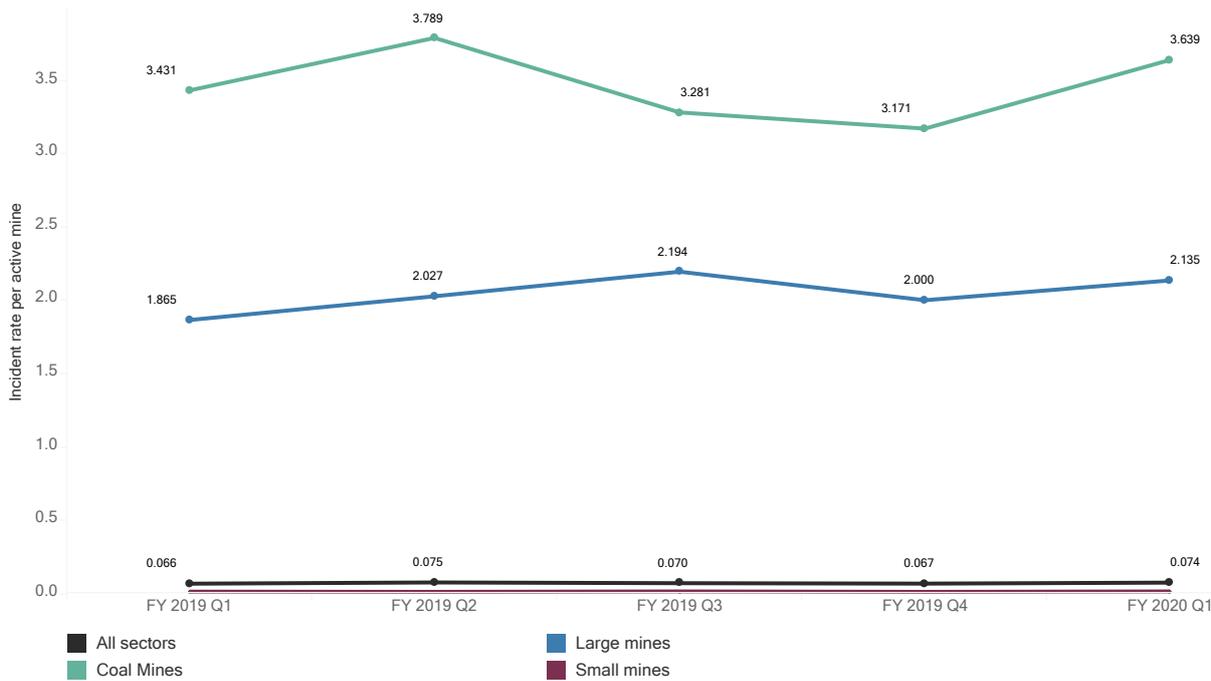
**FIGURE 1. SAFETY INCIDENT NOTIFICATIONS BY SECTOR JULY 2018 TO SEPTEMBER 2019**



As presented in the figure below, incident rates (notified incidents per active mine) by sector have remained relatively stable during the past 15 months. During the past five quarters, 208 individual mines reported safety incidents to the NSW Resources Regulator.

See Appendix 2 for details on number of active mines, incidents and mines that notify incidents.

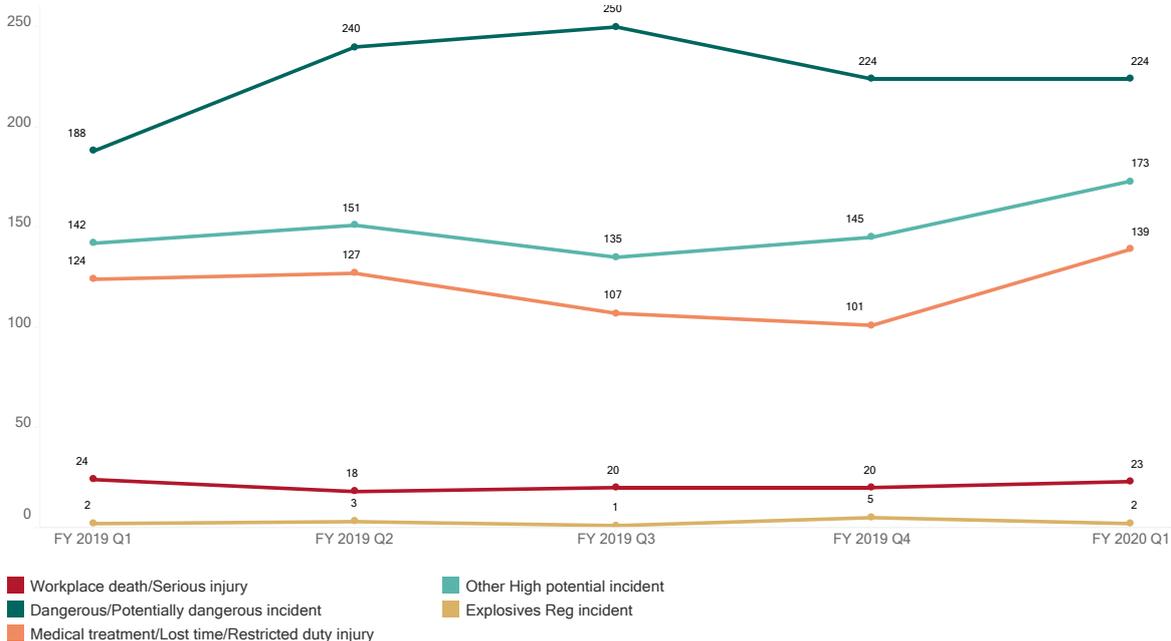
**FIGURE 2. SAFETY INCIDENT NOTIFICATION RATES BY SECTOR JULY 2018 TO SEPTEMBER 2019**



The graph below shows the number of safety incident notifications by type over the past five quarters.

During this quarter there was one work place death incident when a worker was reported to have received fatal injuries following an interaction between a light vehicle and dozer with 22 other incidents being classified as serious. Dangerous / potentially dangerous incidents have remained constant during the last two quarters at 224 incidents. Other high potential incidents have increased since FY 2019 Q3. These include (but are not limited to) gas trips, misfires, unplanned fall of ground and failure of explosion protection equipment.

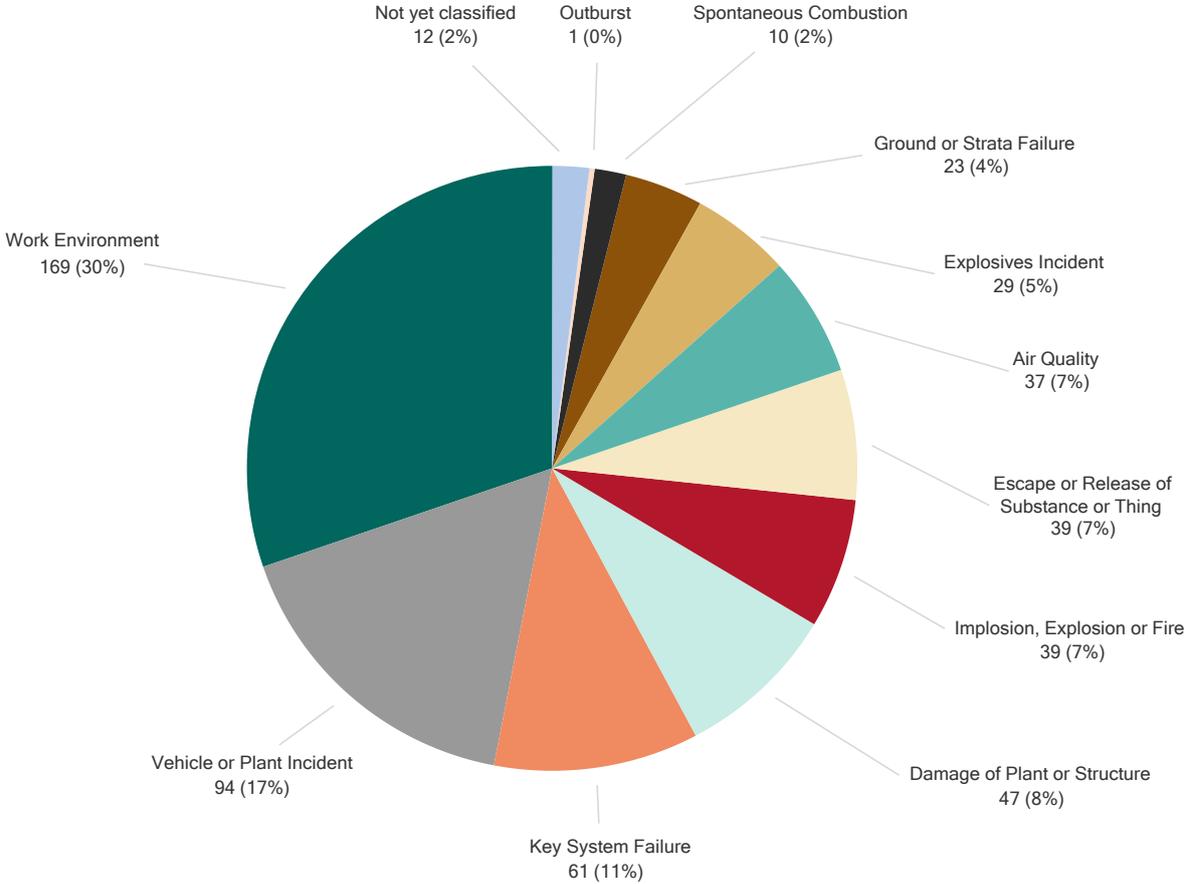
**FIGURE 3. SAFETY INCIDENT NOTIFICATIONS BY TYPE JULY 2018 TO SEPTEMBER 2019**



Of the 561 safety incident notifications received in the current quarter (FY2020 Q1), approximately 30% were classified as work environment, 17% vehicle or plant and 11% key system failures. Work environment incidents include (but are not limited to) slips, trips and falls, falling flying objects, fall from heights, ventilation and noise. Key system failure incidents are those that include (but not limited to) explosion protection, ventilation winder, site power and other systems failure.



**FIGURE 4.** SAFETY INCIDENT NOTIFICATIONS BY CLASSIFICATION  
JULY 2019 TO SEPTEMBER 2019



# Compliance activities

The NSW Resources Regulator uses a range of tools to promote and secure compliance in mines in relation to the relevant work, health and safety legislation. These range from inspections, investigations and safety assessments to notices and prosecutions. Detailed information regarding compliance activities, priorities, outcomes and reports are published on our [website](#) and in our [monthly business activities reports](#).

## Safety assessments by sector

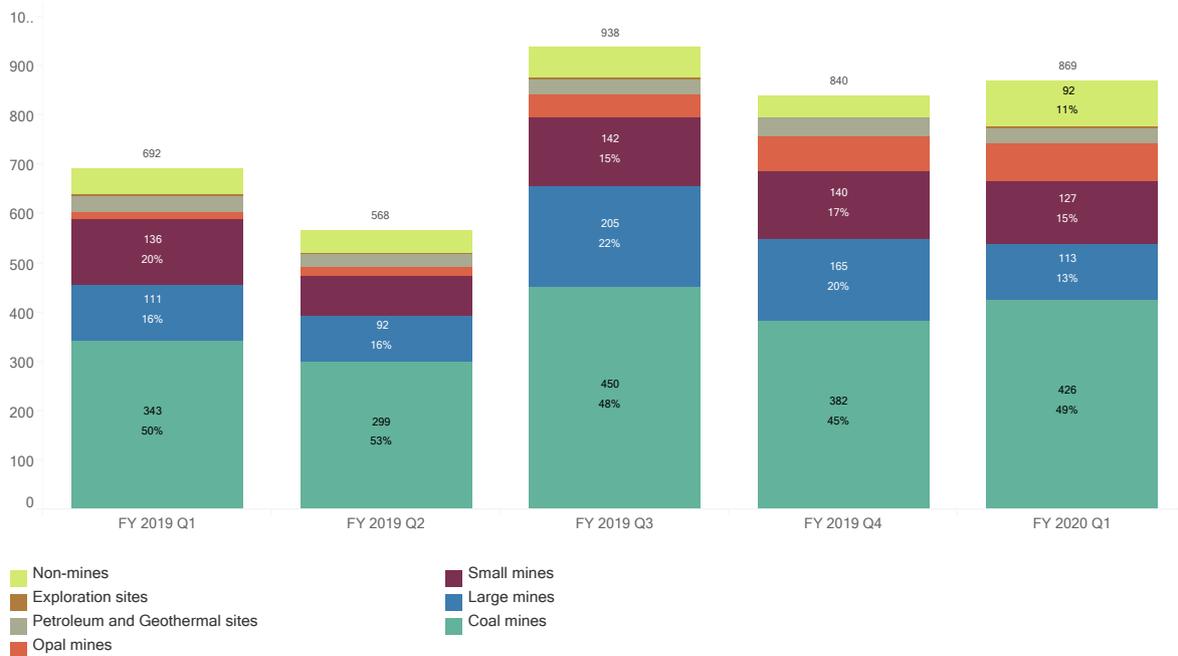
The NSW Resources Regulator undertakes regular safety assessments. The total number of these safety assessments during the past 15 months is shown below by mining sector.

The graph below shows that the coal sector continues to be a priority for the NSW Resources Regulator safety assessment programs, accounting on average for 49% of safety assessments during the previous five quarters.

During the past quarter, the number of assessments carried out on non-mines has more than doubled from 44 assessments in April – June 2019 to 92 assessments. Non-mines include manufacturers (including OEMs), suppliers, designers, importers, licence holders and registration holders

See the sector profile sections of this report for more details.

**FIGURE 5. SAFETY ASSESSMENTS BY SECTOR JULY 2018 TO SEPTEMBER 2019**



## Safety assessments by category and nature

The NSW Resources Regulator’s [Incident Prevention Strategy](#) has shifted the focus of its compliance activity from incident investigation (reactive) to preventing incidents through planned, risk-based interventions (proactive).

Site-based (visiting mine sites) and desktop activities are both important regulatory tools.

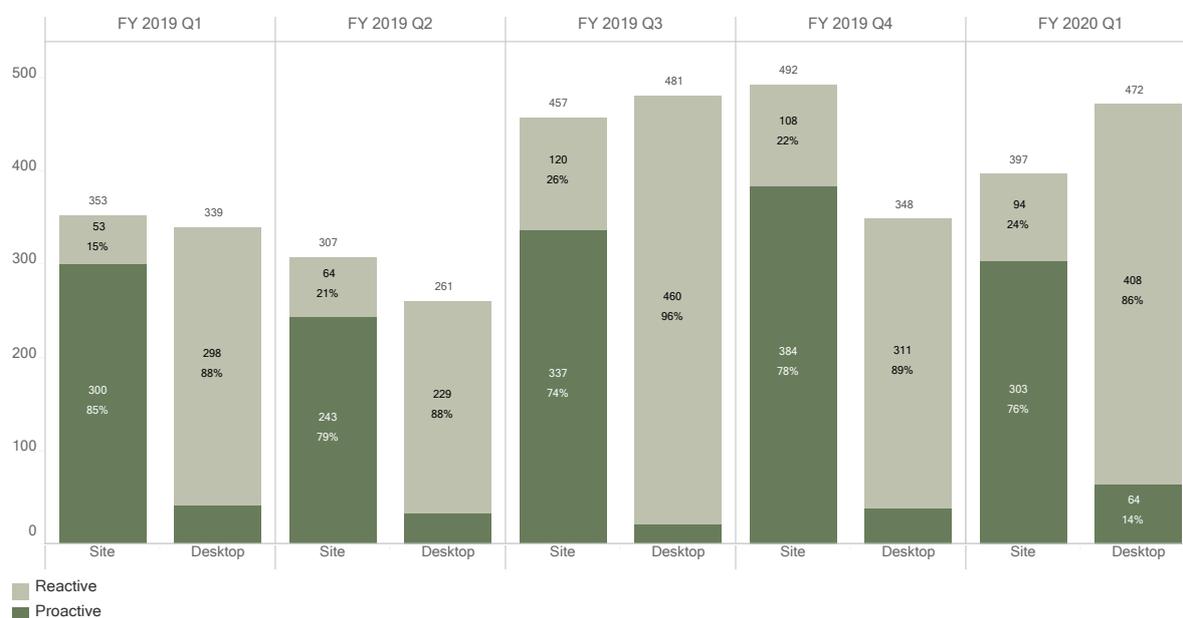
In the reactive space, desktop activities often predominate. These include reviews of control measures following an incident, review of standing dust committee reports, assessment of high-risk activity notifications, applications for exemptions from work health and safety laws, subsidence management plans and preparation for site work.

In the proactive space, onsite assessments focus on establishing whether critical controls have been effectively implemented.

The graph below shows the proportion of site-based and desktop activities undertaken for proactive and reactive safety assessments, for each quarter since July 2018. During the past five quarters regulatory effort across all sectors was split between proactive and reactive programs where approximately 45% of all assessments were proactive (activities not related to incidents and complaints).

In the past 15 months, on average, 78% of the NSW Resources Regulator’s site-based activities were proactively focused on incident prevention.

**FIGURE 6. ASSESSMENTS BY CATEGORY AND NATURE JULY 2018 TO SEPTEMBER 2019**

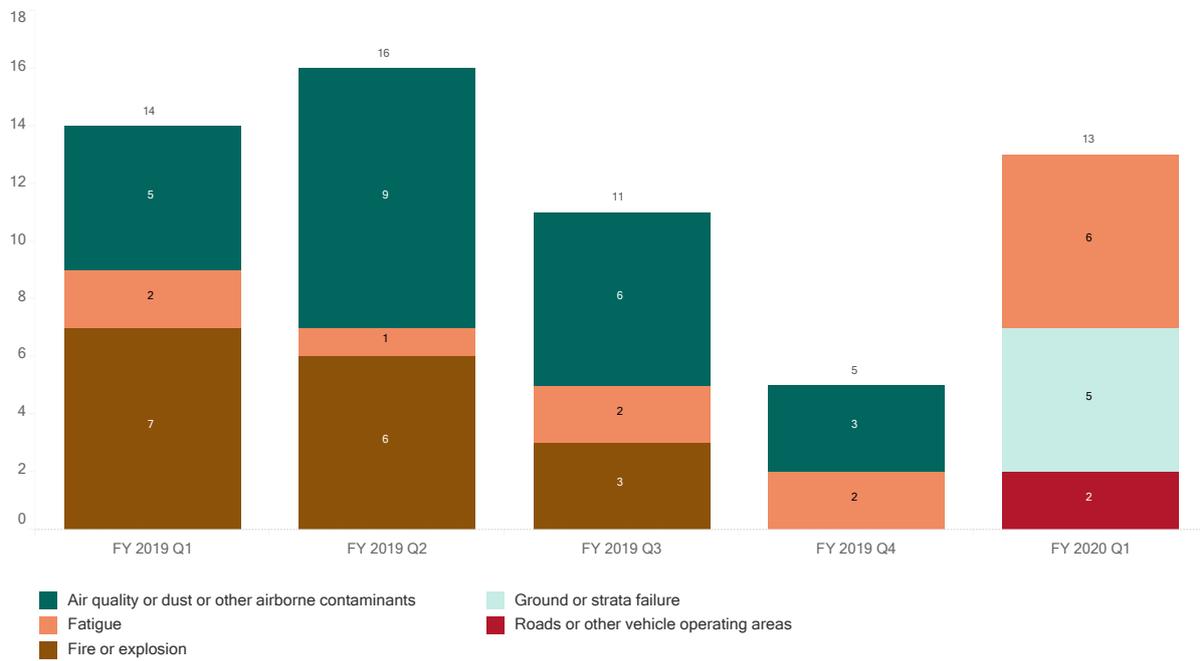


## Targeted assessment program

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

In the current quarter, 13 TAPs were conducted. Most were on 'fatigue' and 'ground and strata failure' hazards. Details are in the table below.

**FIGURE 7. TARGETED ASSESSMENT PROGRAMS BY HAZARD JULY 2018 TO SEPTEMBER 2019**



**TABLE 2. TARGETED ASSESSMENT PROGRAMS JULY 2019 TO SEPTEMBER 2019**

HAZARD	SECTOR	MINE
Fatigue	Large mines, underground	Perilya Southern Operations
		Rasp
		Northparkes
		CSA
		Peak Gold
Ground and strata failure	Coal, surface	Moolarben
	Coal, underground	Dendrobium Colliery
		Clarence Colliery
		Ulan Underground
Small mines, underground	Narrabri Colliery	
Roads and other vehicle operating areas	Coal, surface	Mt. Arthur South
		Wilpinjong Coal Mine
<b>Total</b>		<b>13</b>

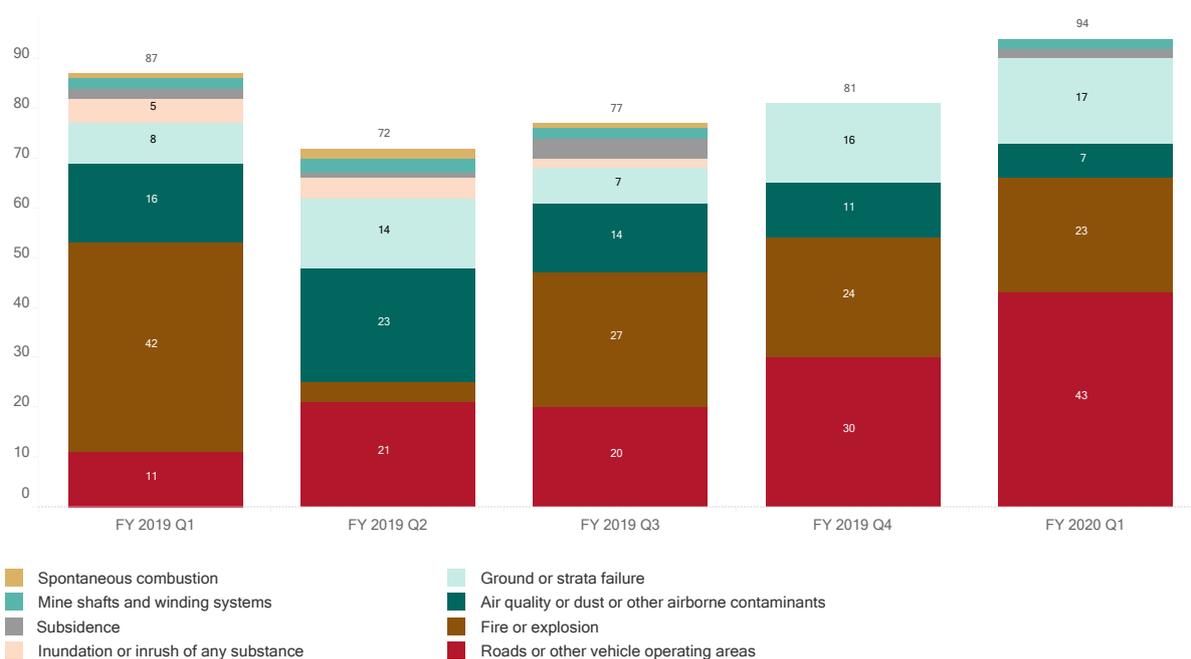


## Planned inspections

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

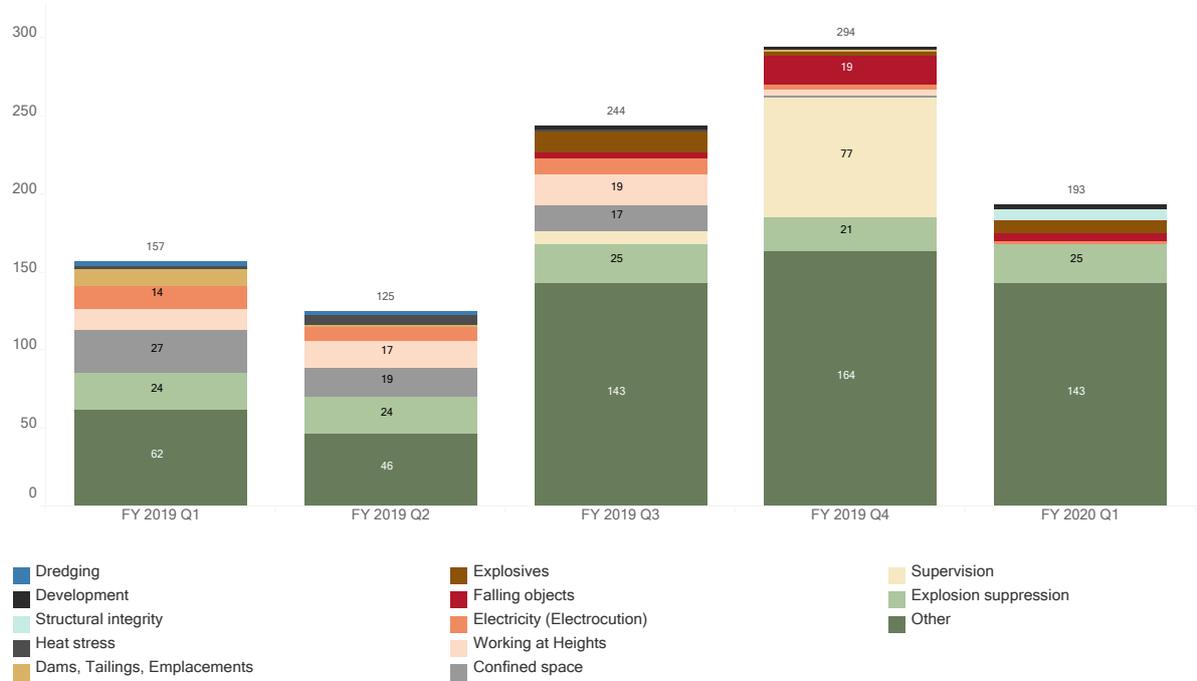
In the current quarter, planned inspections were conducted on the principal hazards shown in the graph below. 'Roads and other vehicle operating areas' has been important program of work this quarter.

**FIGURE 8.** PLANNED INSPECTIONS BY PRINCIPAL HAZARD JULY 2018 TO SEPTEMBER 2019



The graph below shows planned inspections conducted on other hazards. Almost 70% of the 'other' category relates to general safety inspections.

**FIGURE 9. PLANNED INSPECTIONS BY OTHER HAZARD JULY 2018 TO SEPTEMBER 2019**



## Safety notices issued

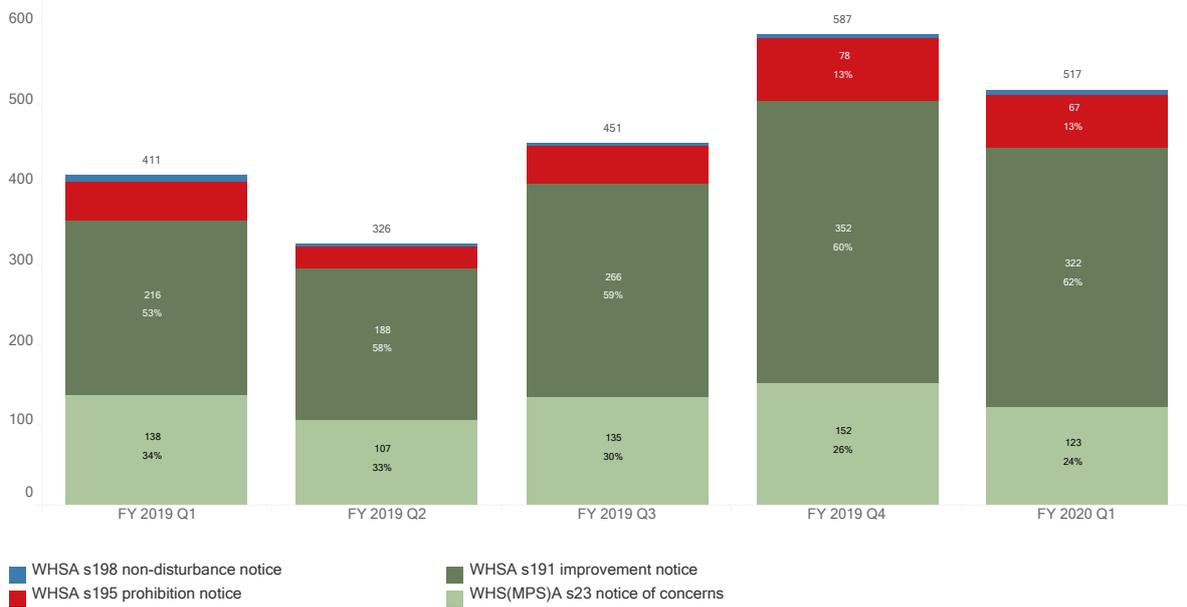
Safety notices issued by the NSW Resources Regulator include prohibition and improvement notices, notices of concern (written notice of matters) and non-disturbance notices.

The graph below shows the number and types of safety notices issued in the five quarters since July 2018. The number of notices issued during the five quarters does vary with a peak showing in FY2019 Q4, a reflection of the state-wide high visibility operation conducted in June 2019.

In the current July - September 2019 quarter (FY 2020 Q1), the NSW Resources Regulator issued 517 safety notices. This represents a decrease of 70 from the 587 safety notices issued in the previous quarter, a reduction of 12%. More than half (62%) of safety notices in the current quarter were improvement notices, 24% were written notice of concerns and 13% (67 of 517) were prohibition notices.



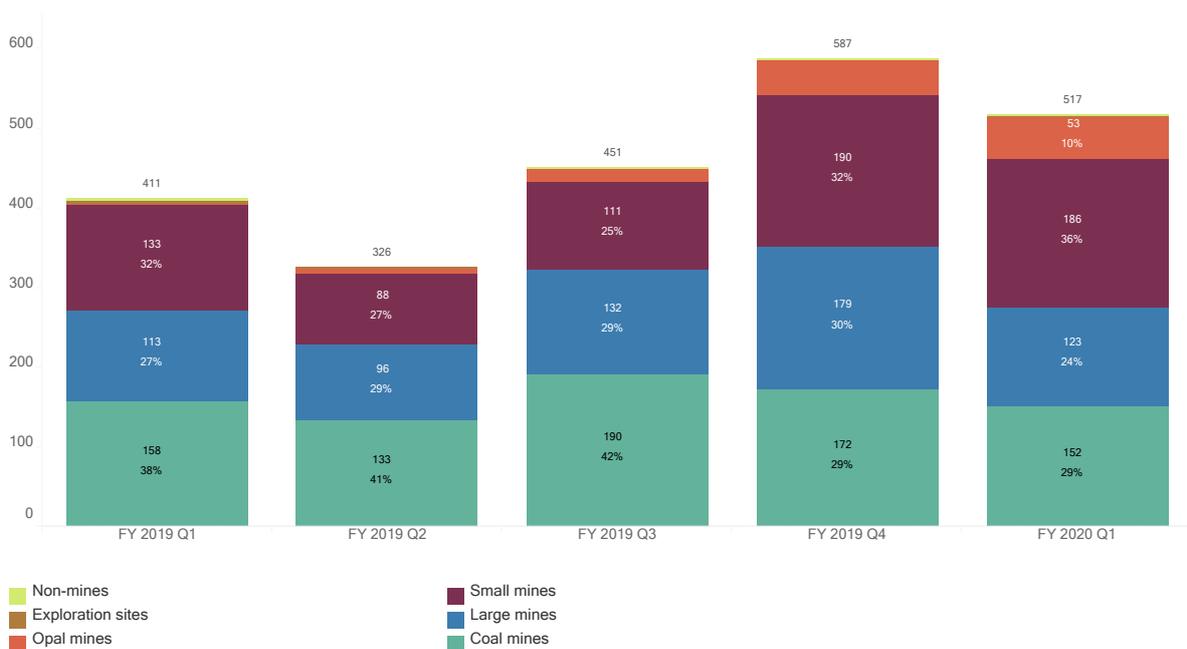
**FIGURE 10. SAFETY NOTICES ISSUED BY TYPE JULY 2018 TO SEPTEMBER 20**



For the July – September 2019 quarter, 29% of safety notices were issued to coal mines. Around one quarter of safety notices were issued to large mines which represents a decrease for the sector as compared to the previous quarter. The number of safety notices issued to small mines has increased to 36%, making it the largest contributing sector to the number of notices this quarter. This observed increase is, in part, a reflection of the nature of inspection activity in the quarter.

During the last three quarters safety notices issued in the opal mines sector has increased.

**FIGURE 11. SAFETY NOTICES ISSUED BY SECTOR JULY 2018 TO SEPTEMBER 2019**

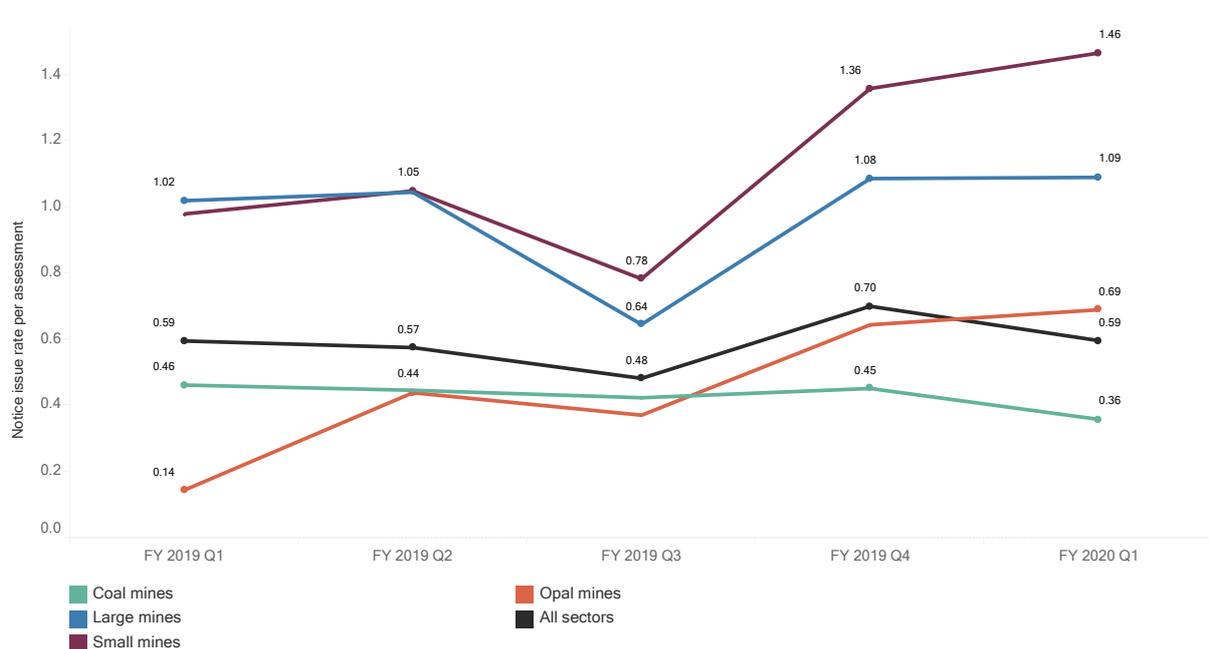


## Safety notice issue rate

Across all mining sectors the safety notice issue rate was 0.59 per assessment for the July – September 2019 quarter. Compared to the previous quarter this represents a slight decrease of approximately 15%. While the rate of notices issued per assessment has decreased for the coal sector, there has been an upward trend in notice rates for small mines since FY 2019 Q3.

Of note petroleum and geothermal sites, exploration sites and non-mines have been included in the all sectors category.

**FIGURE 12. SAFETY NOTICE ISSUE RATE BY SECTOR JULY 2018 TO SEPTEMBER 2019**



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## Spotlight on safety

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### Safety focus on heavy and light vehicle interactions

The NSW Resources Regulator's position is that all vehicle-to-vehicle interactions are avoidable and preventable and we will be taking a zero-tolerance approach where mine operators have not taken appropriate steps to manage this risk.

In response to the fatal injury at the Snapper mineral sands mine in August and the high potential incident at Maules Creek several weeks later, the Resources Regulator issued a [safety bulletin](#) about the risks of heavy and light vehicle interactions.

The bulletin provides details on a near miss where the roadway was cut away during the shift by an excavator, a rollover caused by off-centre engagement of a ripper and most recently an incident where the dozer operator reversed over a parked light vehicle.

Mine operators need to ensure their operations and hazard management programs address each of the seven recommendations outlined in the bulletin. Of note positive communication procedures must be a focus for operators as it was identified as a key issue in many of the recent incidents. Mine operators should also consider the implementation of engineering controls such as collision avoidance and proximity detection systems.

The Resources Regulator will continue to focus compliance efforts on ensuring mine operators adequately address the hazards associated with vehicle-to-vehicle interactions.



## Human and organisation factor analysis of notified incidents informs the NSW Resources Regulator's compliance response

The Resources Regulator's Central Assessment Unit undertakes human and organisational factors (HOF) analysis on targeted reported incidents. The HOF analysis tool is a process used by the Resources Regulator to review incidents within the NSW mining sector. The aim of the assessment is to gain a better understanding of the factors which shape human behaviour at all levels within an organisation. Based on analysis of incidents reported to the NSW Resources Regulator safety management systems and culture have been identified as the most prevailing organisational factors.

Associated with safety management systems the following risk management issues have been identified:

- the absence or failure of the risk management process and
- known risks that were not adequately controlled.

Regarding organisational culture, three key shaping factors were found to include:

- a reporting and investigative culture that had a blame culture, often resulting in disciplinary and or termination actions
- a lack of trust within the organisation whereby there are concerns that workers are not reporting incidents/ near misses in fear of retribution, and
- a lack of organisational learning from incidents, which has led to reoccurrences or near misses.

Mine operators are encouraged to recognise and consider the influence of human and organisational factors when developing and implementing their hazard management programs. Download the [Human and organisational factors fact sheet](#) for more information.





## Annual Mechanical Engineering Safety Seminar was held in August 2019

The Resources Regulator hosted the 29<sup>th</sup> Mechanical Engineering Safety Seminar on 14 and 15 August 2019. The event was attended by more than 270 people at the Sofitel Wentworth in Sydney. A range of presentations were given by mine engineers, managers, consultations, suppliers and specialists covering topics such as mine incidents, critical controls, dust exposure, hydraulic safety, machinery access, fire suppression and collision management. Chris Nicholson, an ex-coal miner and Olympic sailor, shared some incredible and entertaining experiences while captaining a team in the Volvo around the world yacht race. The feedback received from attendees was overwhelmingly positive.

Could not attend? Presentations are available on our [website](#).



# Sector profiles

## NSW Resources Regulator

### SECTOR REPORTING

#### Coal mines

Opencut, underground and coal preparation plants

#### Large mines

METALLIFEROUS AND QUARRIES

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

#### Small mines

METALLIFEROUS, QUARRIES AND OTHER GEMSTONES

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

#### Petroleum and Geothermal

Onshore petroleum and geothermal productions and exploration sites

#### Opal Mines

Opal mines at Lightning Ridge and White Cliffs

#### Exploration

Exploration sites (excluding petroleum)

#### Non-mine

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

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# Coal sector

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## Coal mines safety profile

In the current quarter, there were 122 active coal mines - 77 surface and 45 underground operations. There were 92 open coal mines, 21 under care and maintenance and two intermittent. The remaining seven had a status of planned.

## Safety incident notifications

Legislation requires mine operators to notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. See Appendix 1 for legislative detail.

As presented in the table below, incident rates (numbers of incidents reported per active mine) have remained relatively stable during the past 15 months. On average, 48% of coal mines notifying an incident. During the past five quarters, on average 56 individual mines reported safety incidents to the NSW Resources Regulator.

See Appendix 2 for details on numbers of active mines and notifying mines.

**TABLE 3. COAL SECTOR INCIDENT NOTIFICATION RATES JULY 2018 TO SEPTEMBER 2019**

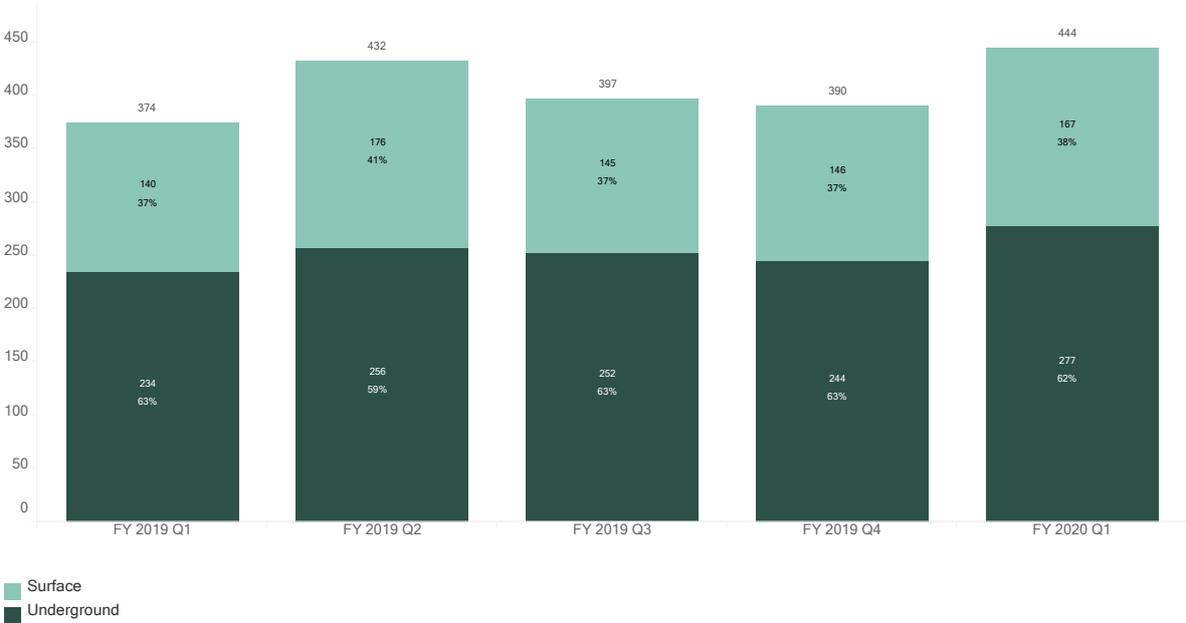
MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Incidents	374	432	397	390	444	407
Active mines	109	114	121	123	122	118
Incident rate per active mine	3.431	3.789	3.281	3.171	3.639	3.458
Mines that notified incidents	52	58	54	55	61	56
% of mines notifying an incident	48%	51%	45%	45%	50%	48%
Incident rate per notifying mine	7.192	7.448	7.352	7.091	7.279	7.275

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

In the current quarter (FY 2020 Q1), the NSW Resources Regulator received 444 safety incident notifications from the coal mines sector. This represents a 17% increase when compared to the same period a year before (FY 2019 Q1). This fluctuates but generally shows a steady overall trend over time.

In the current quarter almost two-thirds of safety incident notifications received (62%) from the coal sector were from underground coal mines. During the last five quarters, the proportion of safety incident notifications by underground coal mines has remained relatively consistent (62% of all notifications from the coal sector, on average).

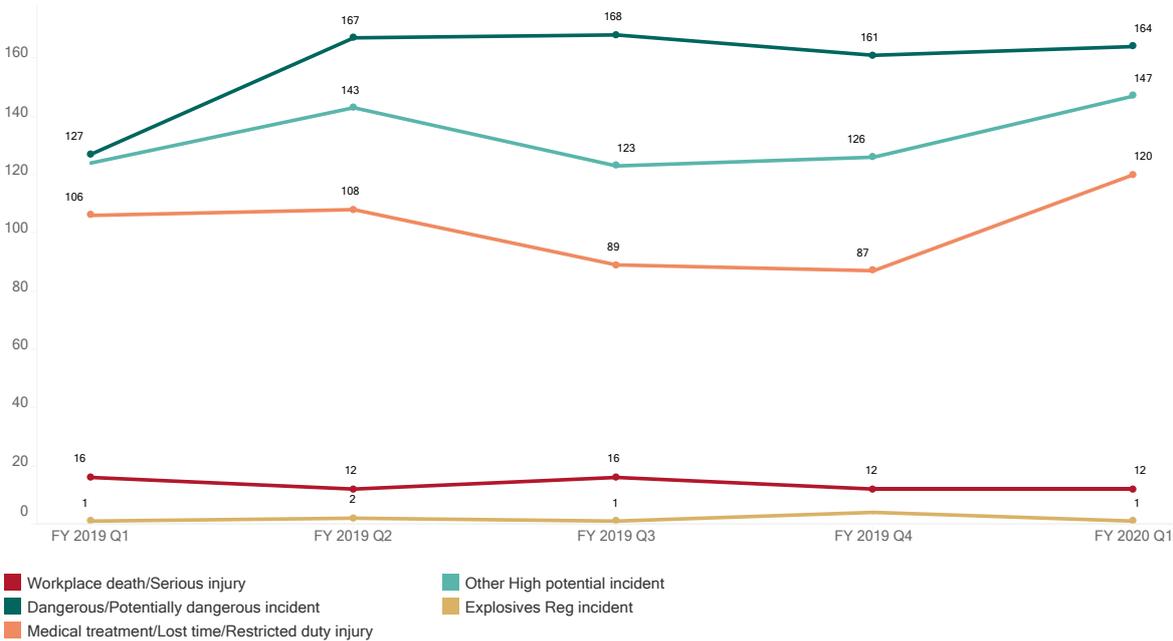
**FIGURE 13. COAL SECTOR SAFETY INCIDENT NOTIFICATIONS BY OPERATION TYPE JULY 2018 TO SEPTEMBER 2019**



The graph below shows the number of safety incident notifications by type received during the past five quarters from the coal sector.

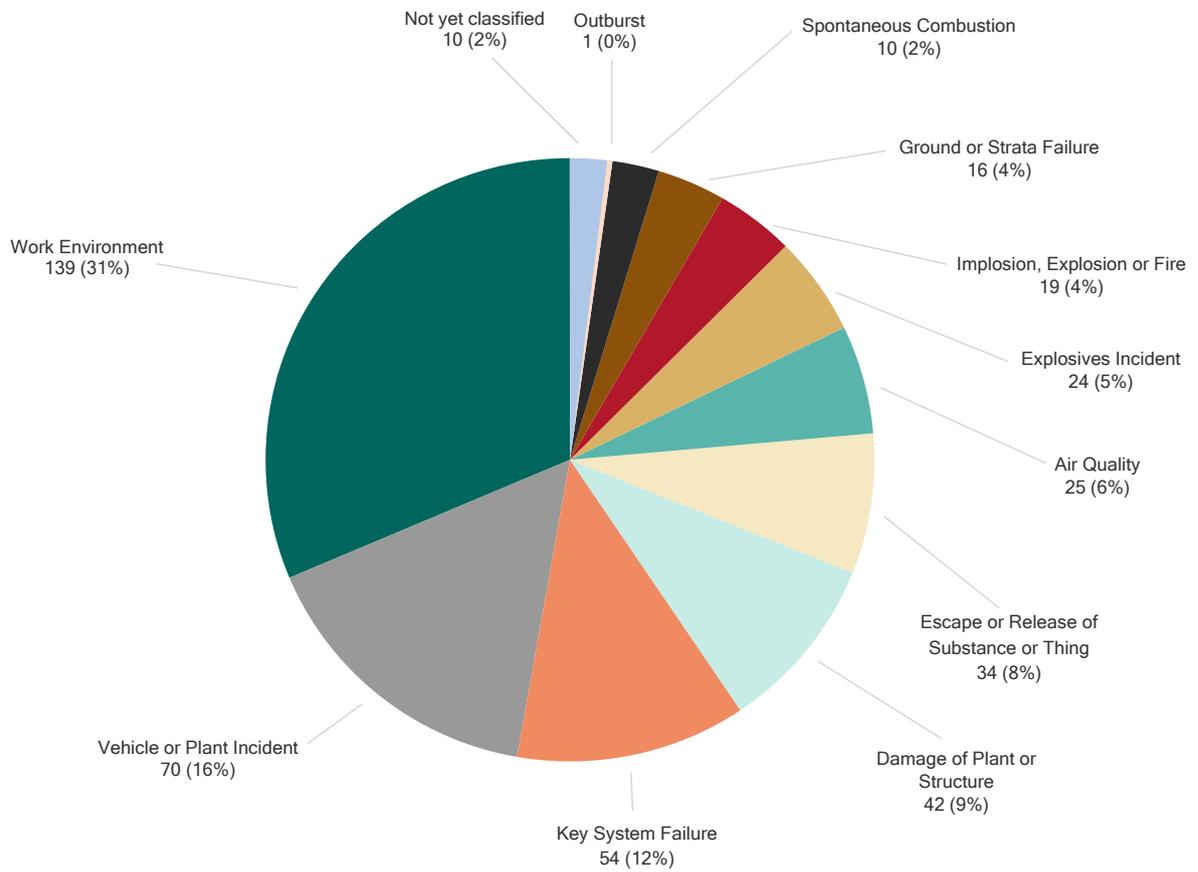
Just over one third (164 of 444) of the notifications received in the current quarter (FY2020 Q1) were for 'dangerous/potentially dangerous incidents'. The number of these incidents has remained relatively stable during the past four quarters. An increase in the number of 'other high potential' and 'medical treatment, lost time and restricted duty injury incidents' was observed this quarter compared to the last two quarters.

**FIGURE 14. COAL SECTOR SAFETY INCIDENT NOTIFICATIONS BY INCIDENT TYPE JULY 2018 TO SEPTEMBER 2019**



Of the 444 safety incident notifications received in the current quarter (FY2020 Q1), approximately 31% were classified as work environment, 16% vehicle or plant and 12% key system failures. Work environment incidents include (but are not limited to) slips, trips and falls, falling flying objects, fall from heights, ventilation and noise. Key system failure incidents are those that include (but not limited to) explosion protection, ventilation winder, site power and other systems failure.

**FIGURE 15.** COAL SECTOR SAFETY INCIDENT NOTIFICATIONS BY INCIDENT TYPE CLASSIFICATION JULY 2019 TO SEPTEMBER 2019



# Coal sector compliance activities

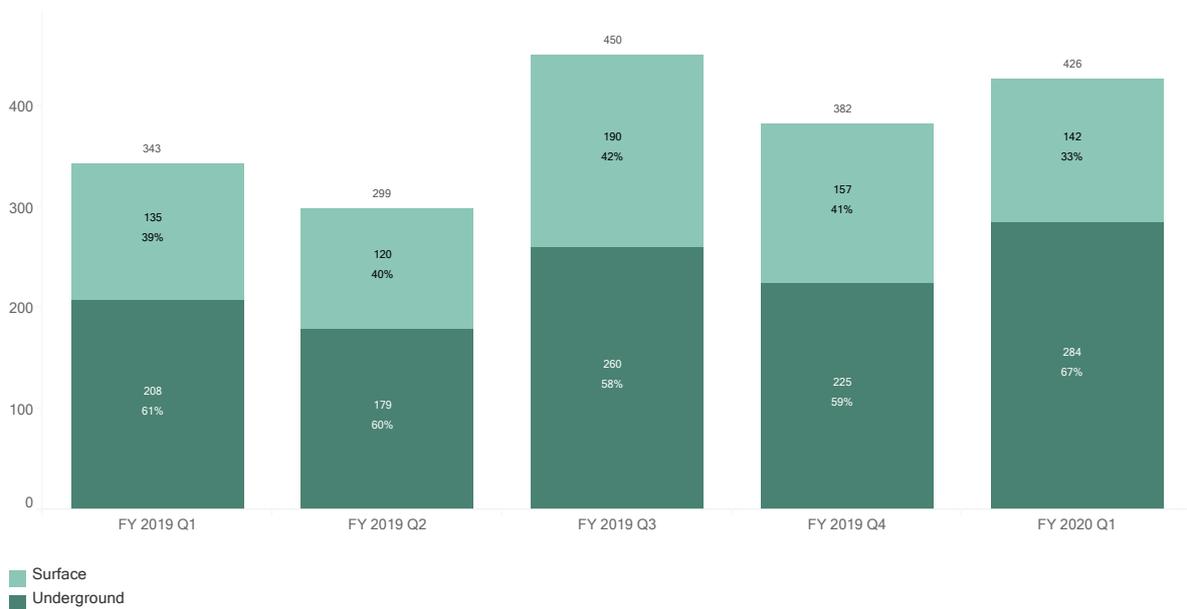
## SAFETY ASSESSMENTS

### SAFETY ASSESSMENTS BY OPERATION TYPE

The graph below, shows that in the five quarters since July 2018, the clear majority of coal sector assessments conducted by the NSW Resources Regulator were in underground sites, compared to surface operations. Though the proportions varied during that time, between 58% and 67% of assessments were in underground coal operations.

In the current quarter (FY 2020 Q1), 67% of all coal assessments were in underground operations.

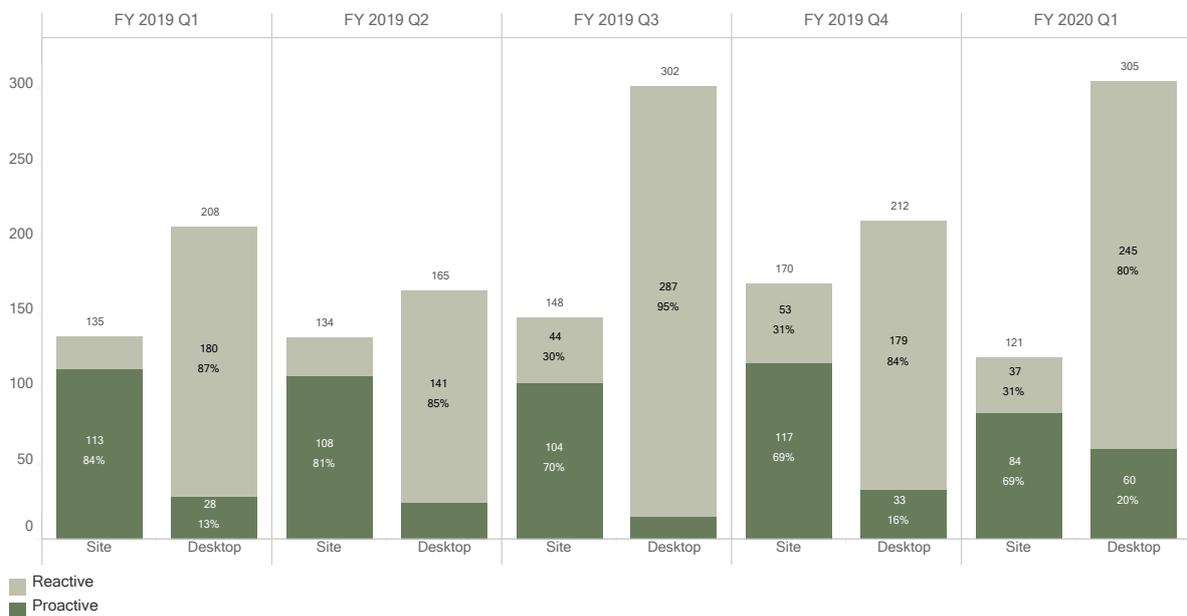
**FIGURE 16.** COAL SECTOR ASSESSMENTS BY OPERATION TYPE  
JULY 2018 TO SEPTEMBER 2019



## PROACTIVE AND REACTIVE SAFETY ASSESSMENTS BY CATEGORY

The graph below shows the proportion of site and desktop safety assessments undertaken in the coal sector for the five quarters since July 2018 that were classified as reactive (incident investigation) or proactive (planned, risk-based interventions). On average, around 137 proactive assessments were conducted each quarter, representing nearly 36% of all assessments. In the current quarter, almost 70% of site assessments in the coal sector were proactive in nature.

**FIGURE 17. COAL SECTOR ASSESSMENTS BY CATEGORY AND NATURE JULY 2018 TO SEPTEMBER 2019**

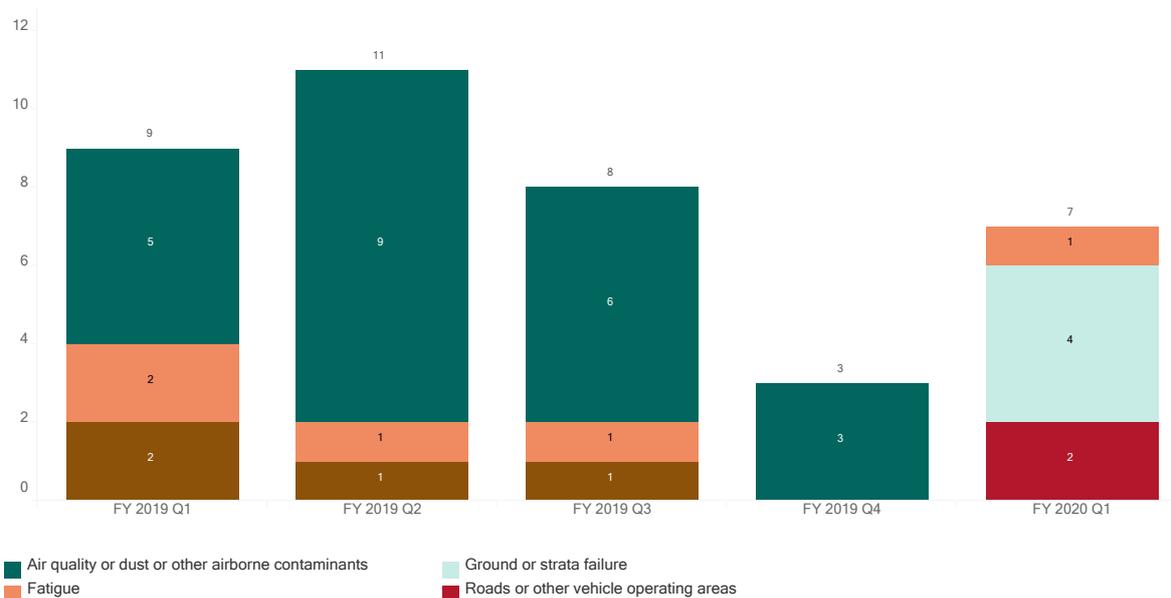


## TARGETED ASSESSMENT PROGRAM

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

Since July 2019, the NSW Resources Regulator conducted seven TAPs in the coal sector. More than half were on the principal hazard ‘ground and strata failure’.

**FIGURE 18.** COAL SECTOR TARGETED ASSESSMENT PROGRAMS BY HAZARD JULY 2018 TO SEPTEMBER 2019



The table below, shows the TAPs conducted during the three-month reporting period by coal mine.

**TABLE 4.** COAL SECTOR TARGETED ASSESSMENT PROGRAMS JULY 2019 TO SEPTEMBER 2019

HAZARD	SECTOR	MINE
Fatigue	Coal, open cut	Moolarben Dendrobium Colliery
Ground and strata failure	Coal, Underground	Clarence Colliery Ulan Underground Narrabri Colliery

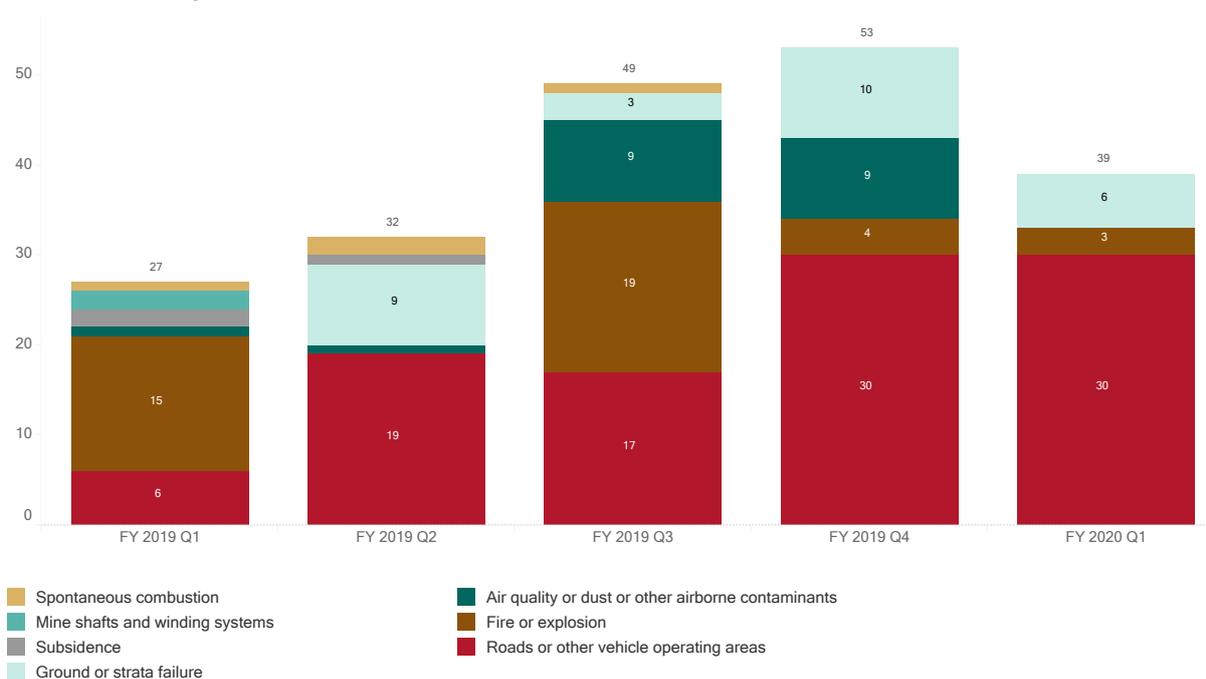
HAZARD	SECTOR	MINE
Roads and other vehicle operating areas	Coal, underground	Mt. Arthur South
	Coal, open cut	Wilpinjong Coal Mine
<b>Total</b>		<b>7</b>

## PLANNED INSPECTIONS

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

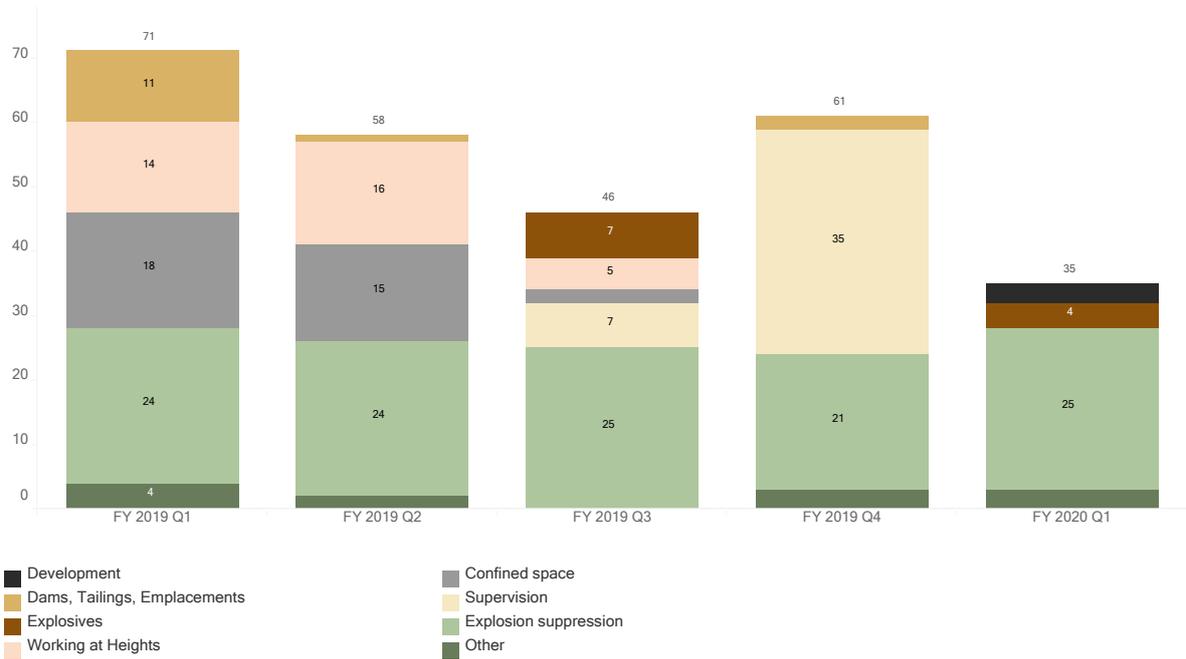
Since July 2019, the NSW Resources Regulator conducted 39 planned inspections. As shown in the graph below, over three quarters (30 of 39) were on the principal hazard 'roads and other vehicle operating areas' which is an important program of work this quarter in the coal sector.

**FIGURE 19. COAL SECTOR PLANNED INSPECTIONS ON PRINCIPAL HAZARDS JULY 2018 TO SEPTEMBER 2019**



In the current quarter, 35 planned inspections were conducted on other hazards shown in Figure 20. Just over 70% were conducted on the hazard explosion suppression.

**FIGURE 20. COAL SECTOR PLANNED INSPECTIONS ON OTHER HAZARDS JULY 2018 TO SEPTEMBER 2019**



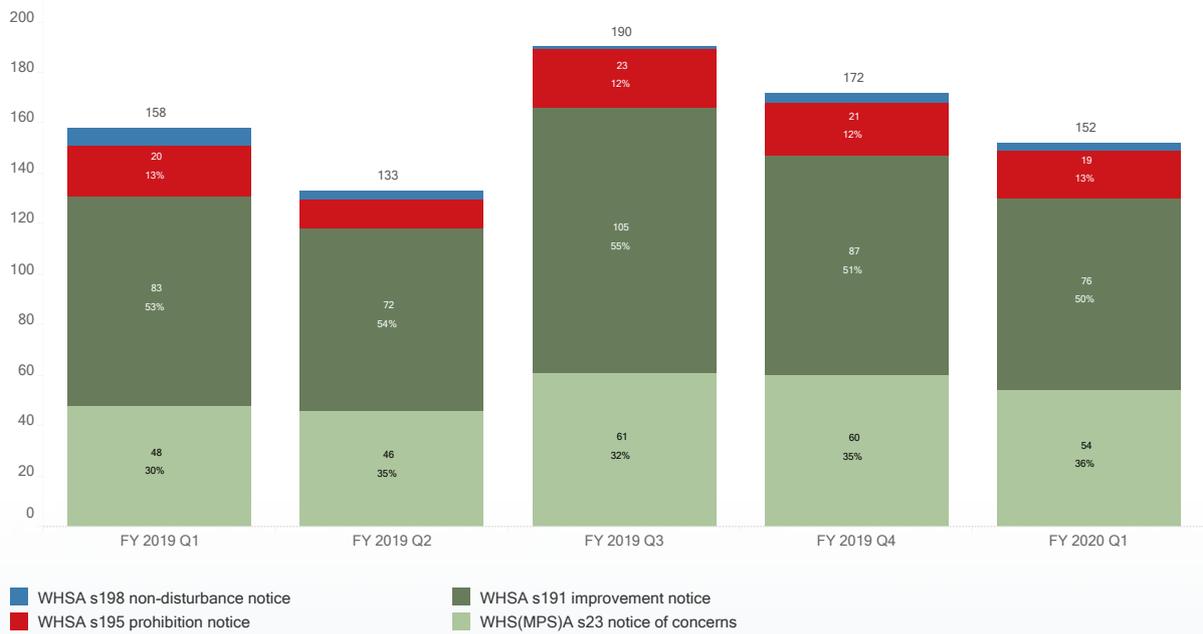
**SAFETY NOTICES ISSUED**

The graph below shows the number and types of safety notices issued in the coal sector for the five quarters since July 2018.

In the current quarter (FY 2020 Q1) the NSW Resources Regulator issued 152 safety notices in the coal sector. Half were improvement notices and 13% (19 of 152) were prohibition notices. This equates to the NSW Resources Regulator issuing, on average, one prohibition notice, for approximately every four improvement notices.



**FIGURE 21. COAL SECTOR SAFETY NOTICES ISSUED JULY 2018 TO SEPTEMBER**



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# Spotlight on coal sector

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Our seminar for Mine Safety and Health Representatives highlighted near misses and the importance of dust control

The annual Mine Safety and Health Representatives Seminar was held this year on 11 September at the Crowne Plaza Hunter Valley Hotel. The seminar was attended by 85 workforce representatives from coal mine operations across the state. The seminar involved 11 Resources Regulator staff presenting material and delivering important messages to this group.

The day commenced with the Chief Inspector, highlighting the number of serious near miss incidents occurring in recent months, a trend which if it continues could escalate into fatal outcomes. Resources Regulator team managers gave updates and explained trends in their area of operations. The seminar then split the MSHR's into different streams where specific presentations were made relevant to the underground, surface and electrical groups. Presentations were made on the outcomes of recent incident investigations and emerging trends in industry. In the afternoon an important message from Coal Services, on the dangers to worker health from airborne dust and the importance of the devices and processes put in place to control this hazard.

MSHR's have a statutory role under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* which the Resources Regulator sees as important to support. All presenters emphasized the role of the MSHR and how they could assist in addressing the highlighted trends in the course of their duties.





## More work to be done by surface coal operations in managing Roads and other Vehicle Operating Areas hazards

During the last few months, the Resources Regulator has undertaken a planned inspection program focussed on the major hazard of Roads and other Vehicle Operating Areas at surface coal operations. While there were positive outcomes, inspectors identified a number of operations where risk control measures were either lacking or contravened the operation's own standards.

Observations on control measures of concern included:

- vehicle interactions where dysfunctional 'positive communications' was evident. This was a general comment but was particularly evident on narrow dumps.
- roadways and/or intersections not being constructed or maintained to the mine's own design standards.
- windrows not being constructed or maintained to the mine's own design standards.
- vehicles being parked outside of designated areas, nor being parked fundamentally stable.

The observations made by inspectors are of additional concern given that most of the inspections were 'announced' and the mine was aware that the inspectors were coming on site. In addition, mine supervisors had been at the particular sites involved on the day or in the days leading up to the planned inspection.

All of the issues listed above have been the subject of comment in Incident Investigation Reports and Safety Alerts/Bulletins published by the Resources Regulator. In addition, all noted concerns have been addressed through notices at the relevant operations. The Resources Regulator Inspectors will continue to assess industry performance in this critical risk control area.



# Large mines and quarries sector

## Large mines and quarries safety profile

In the current quarter (FY 2020 Q1), there were 37 active large mines and quarries; 17 surface operations and 16 underground mines. There were 33 open large mines and quarries and four under care and maintenance.

## Safety incident notifications

Legislation requires mine operators to notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. See Appendix 1 for legislative detail.

As presented in the table below, incident rates (numbers of incidents reported per notifying mine) during the past 15 months on average, 59% of mines notifying an incident. During the past five quarters, on average 22 individual mines reported safety incidents to the NSW Resources Regulator.

See Appendix 2 for details on numbers of active mines and notifying mines.

**TABLE 5. LARGE MINES AND QUARRIES SECTOR INCIDENT NOTIFICATION RATES  
JULY 2018 TO SEPTEMBER 2019**

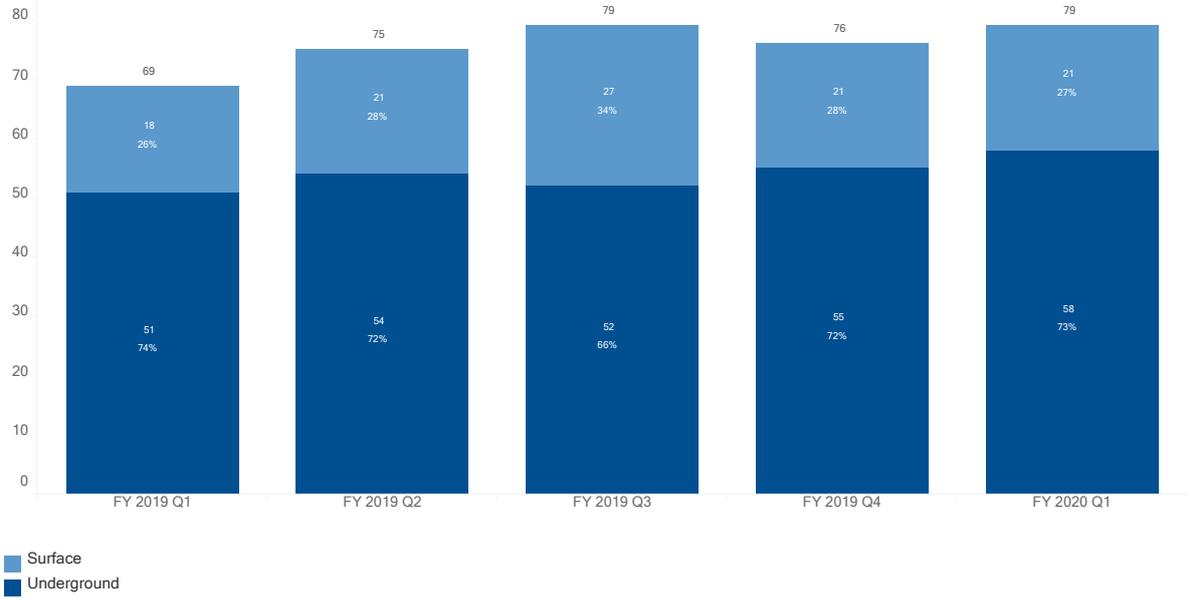
MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Incidents	69	75	79	76	79	76
Active mines	37	37	36	38	37	37
Incident rate per active mine	1.865	2.027	2.194	2.000	2.135	2.043
Mines that notified incidents	19	22	21	25	22	21.8
% of mines notifying an incident	51%	59%	58%	66%	59%	59%
Incident rate per notifying mine	3.632	3.409	3.762	3.040	3.591	3.468

Since July 2019, the NSW Resources Regulator received 79 safety incident notifications from the large mines and quarries sector.

The graph below shows the proportion of safety incident notifications received from surface and underground large mines and quarries operations for the last five quarters.

In the current quarter, 73% of safety incident notifications from the large mines and quarries sector were received from underground operations. During the last five quarters, most of the safety incident notifications were by underground operations (varying between 66% to 74% of notifications).

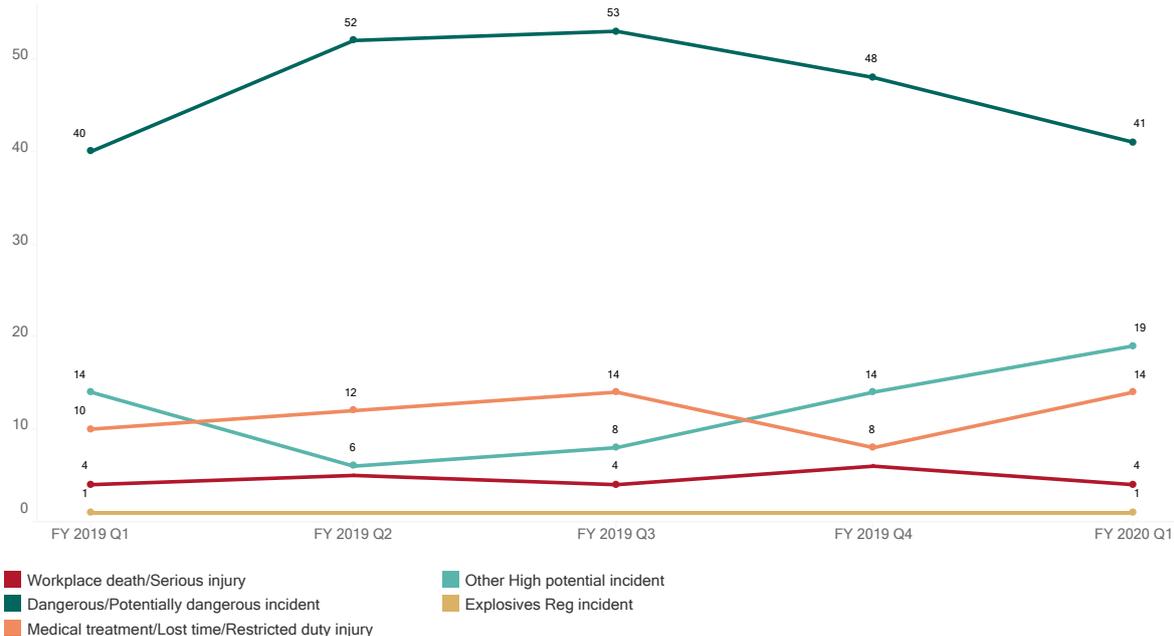
**FIGURE 22.** LARGE MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS BY OPERATION TYPE JULY 2018 TO SEPTEMBER 2019



The graph below shows the number of safety incident notifications by incident type received during the past five quarters from large mines and quarries sector.

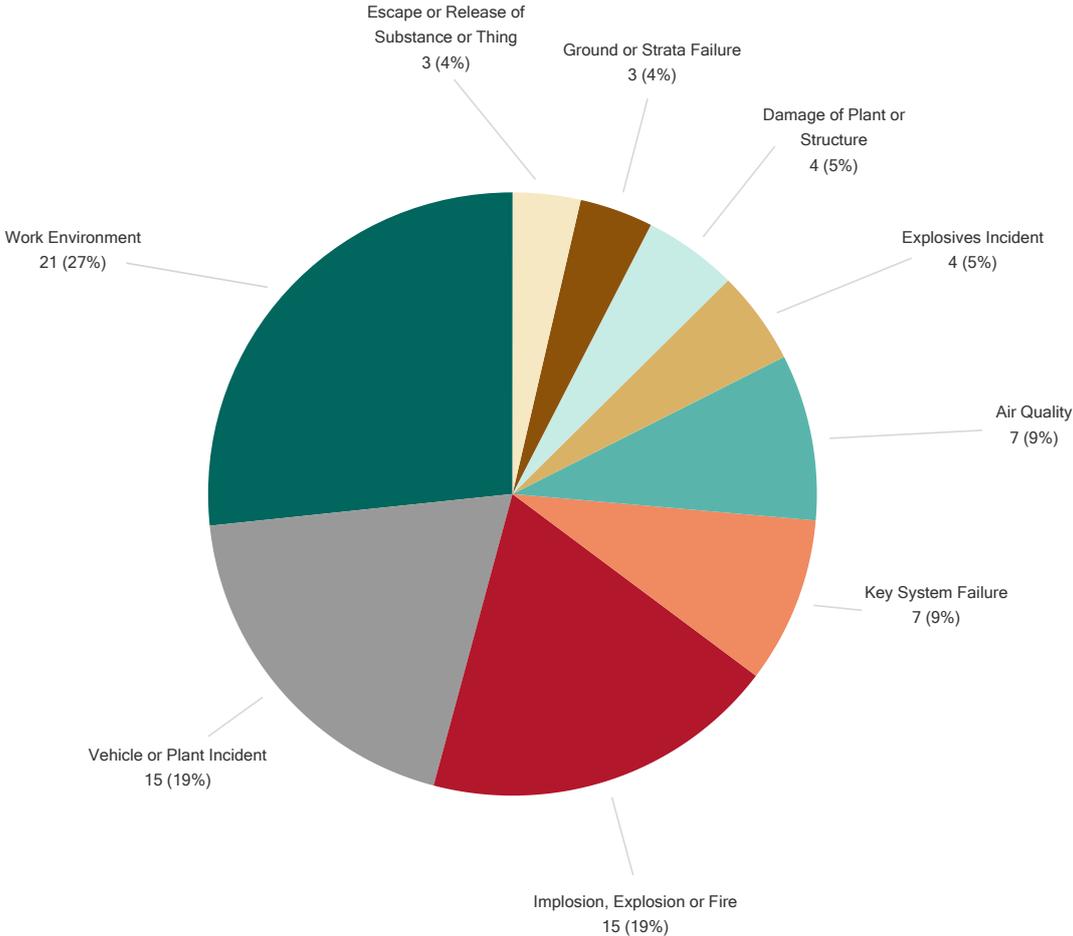
In this quarter, one of the four workplace death / serious injury incident notification relates to a work place death. Just over half of safety incident notifications received since July 2019 relate to dangerous/potentially dangerous incidents.

**FIGURE 23. LARGE MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS BY INCIDENT TYPE JULY 2018 TO SEPTEMBER 2019**



Of the 79 safety incident notifications received in the current quarter (FY2020 Q1), approximately 27% were classified as work environment, 19% vehicle or plant and 19% implosion, explosion or fire. Work environment incidents include (but are not limited to) slips, trips and falls, falling flying objects, fall from heights, ventilation and noise.

**FIGURE 24.** LARGE MINES AND QUARRIES SECTOR SAFETY INCIDENT NOTIFICATIONS BY INCIDENT TYPE CLASSIFICATION JULY 2019 TO SEPTEMBER 2019



# Large mines and quarries compliance activities

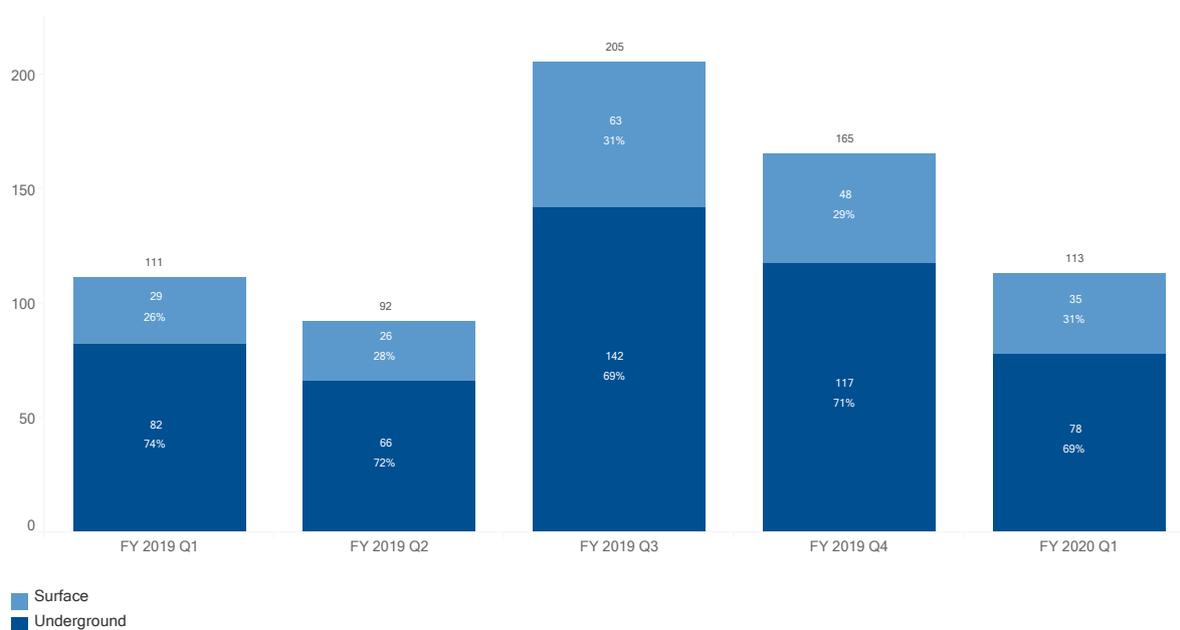
## SAFETY ASSESSMENTS

### SAFETY ASSESSMENTS BY OPERATION TYPE

The figure below shows that in the five quarters since July 2018, the clear majority of large mines and quarries sector assessments conducted by the NSW Resources Regulator were in underground, compared to surface operations. Though the proportions varied during that time, between 69% and 74% of assessments were in underground operations.

In the current quarter (FY 2020 Q1), 69% of all large mines and quarries assessments were in underground operations.

**FIGURE 25.** LARGE MINES AND QUARRIES SECTOR ASSESSMENTS BY OPERATION TYPE JULY 2018 TO SEPTEMBER 2019



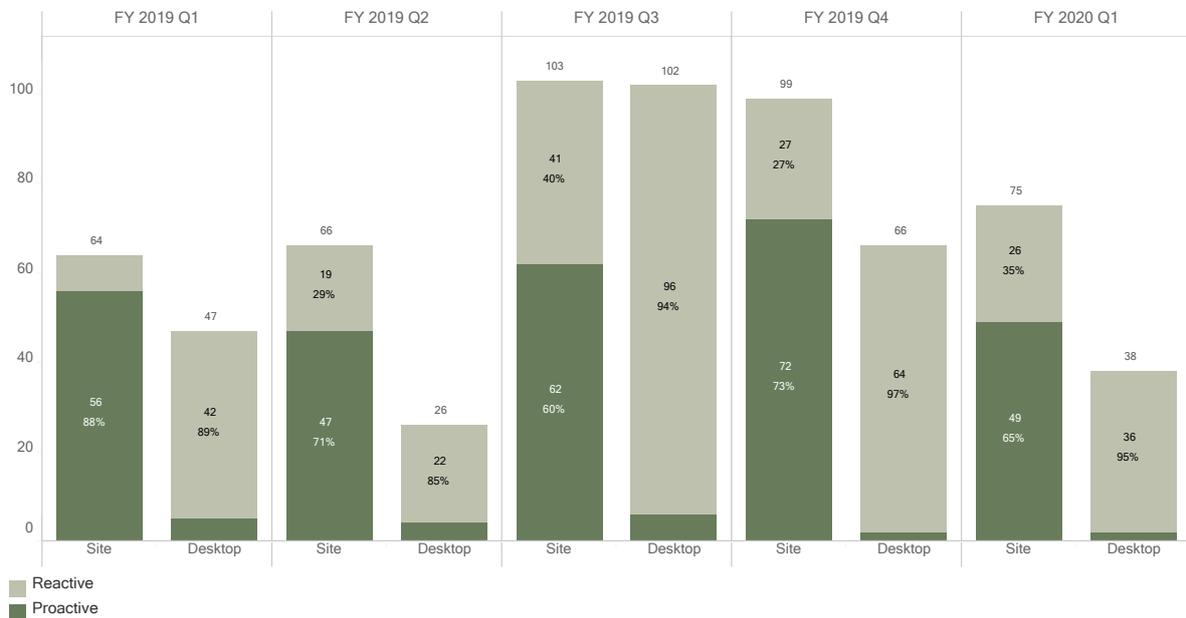
## PROACTIVE AND REACTIVE SAFETY ASSESSMENTS CONDUCTED BY CATEGORY

The graph below shows the proportion of site and desktop safety assessments undertaken in the large mines and quarries sector for the five quarters since July 2018 that were classified as reactive (incident investigation) or proactive (planned, risk-based interventions).

In the current quarter, 65% (49 of 75) of site assessments in large mines and quarries were proactive in nature. During the last five quarters the NSW Resources Regulator conducted 286 proactive site-based assessments, representing 70% of all site-based assessments.

On average, 61 proactive assessments were conducted each quarter, representing nearly 45% of all assessments.

**FIGURE 26.** LARGE MINES AND QUARRIES SECTOR SAFETY ASSESSMENTS BY CATEGORY AND NATURE JULY 2018 TO SEPTEMBER 2019

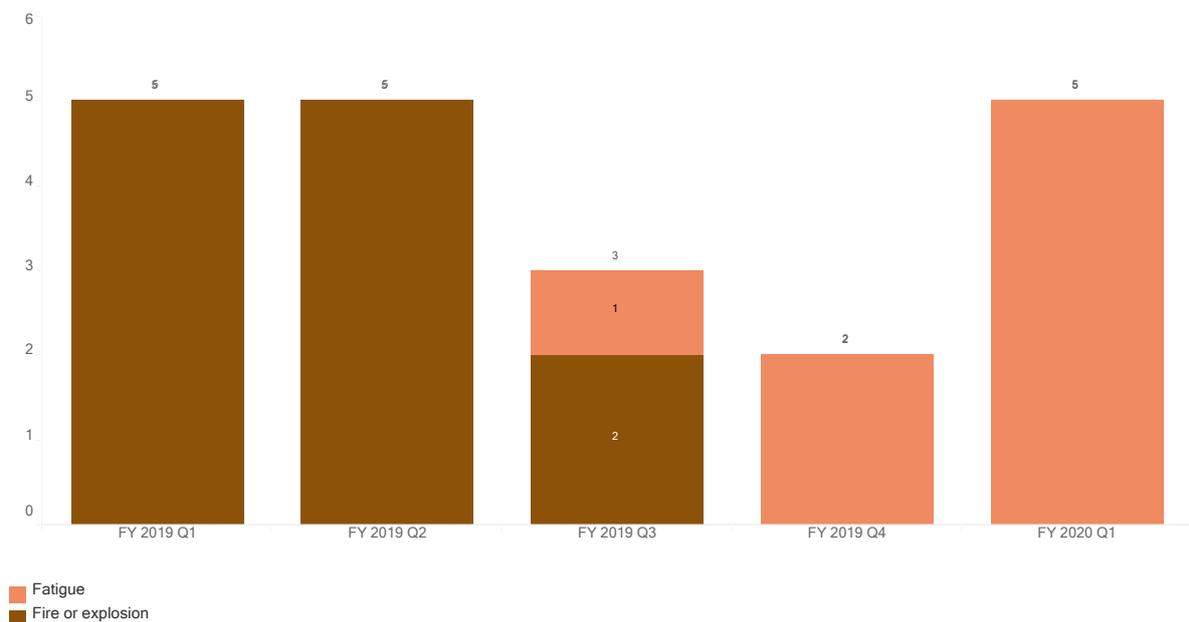


## TARGETED ASSESSMENT PROGRAM

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

For the past two quarters, since March 2019, the TAPS program in the large mines and quarries sector has focussed on the hazard 'fatigue'. In the current quarter, five TAPs on 'fatigue' were conducted.

**FIGURE 27.** LARGE MINES SECTOR TARGETED ASSESSMENT PROGRAMS BY HAZARD JULY 2018 TO SEPTEMBER 2019



The table below, shows the TAPs conducted during the three-month reporting period by mine, in the large mines and quarry sector.

**TABLE 6. LARGE MINES AND QUARRIES SECTOR TARGETED ASSESSMENT PROGRAMS CONDUCTED JULY 2019 TO SEPTEMBER 2019**

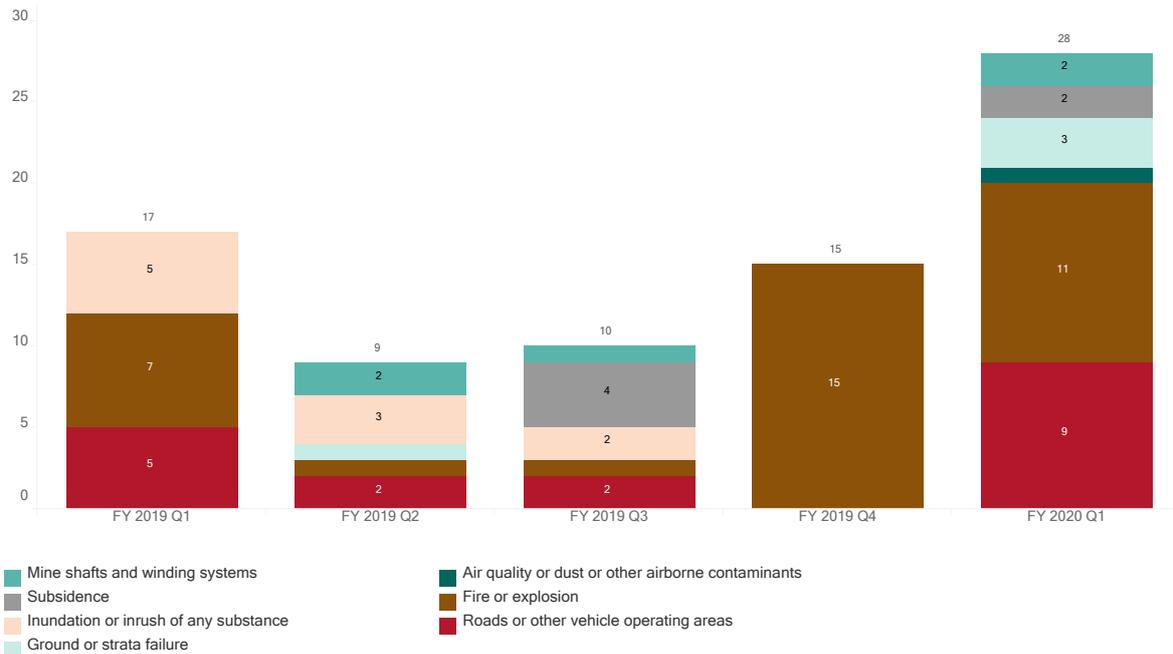
HAZARD	SECTOR	MINE
Fatigue	Large mines, underground	Perilya Southern Operations
		Rasp
		Northparkes
		CSA
		Peak Gold
<b>Total</b>		<b>5</b>

**PLANNED INSPECTIONS**

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

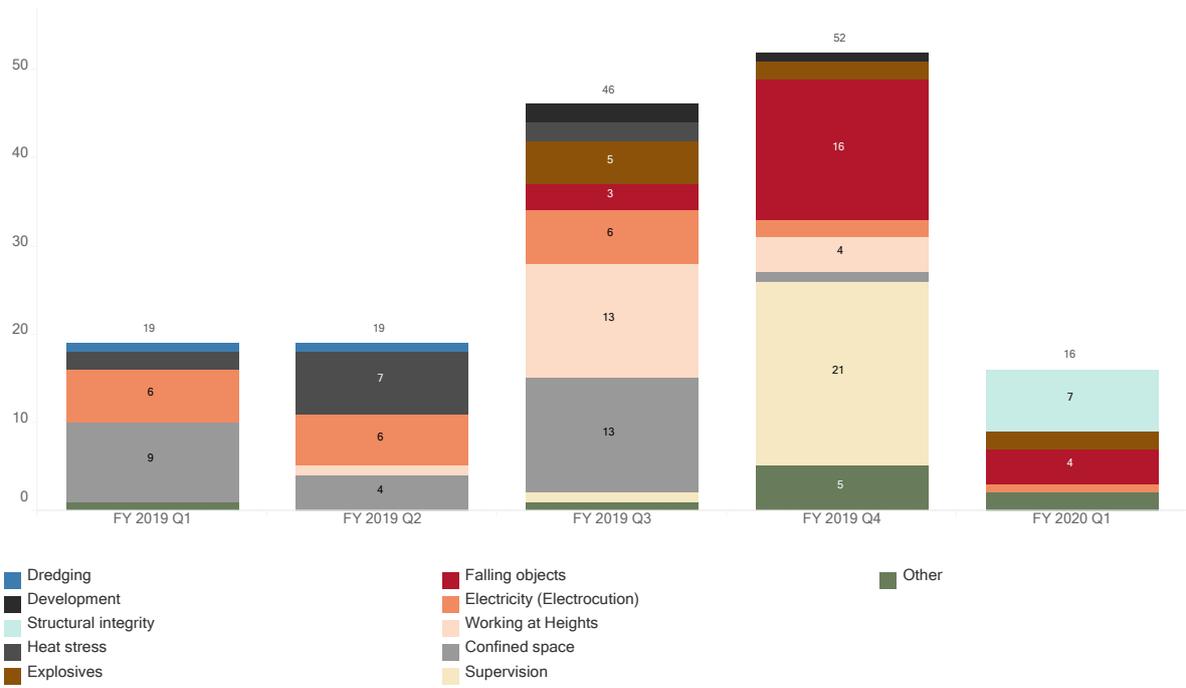
In the current quarter, 28 planned inspections were conducted on the principal hazards shown in the graph below. Just over 70% of planned inspections were conducted on ‘roads and other vehicle operating areas’ and ‘fire and explosion’ which were two important programs of work this quarter in the large mines and quarries sector.

**FIGURE 28. LARGE MINES AND QUARRIES PLANNED INSPECTIONS ON PRINCIPAL HAZARDS JULY 2018 TO SEPTEMBER 2019**



In the current quarter, 16 planned inspections were conducted on other hazards shown in the graph below. Nearly half (7 of the 16) of the planned inspections in the large mines and quarries sector were conducted on structural integrity.

**FIGURE 29.** LARGE MINES PLANNED INSPECTIONS CONDUCTED ON OTHER HAZARDS JULY 2018 TO SEPTEMBER 2019



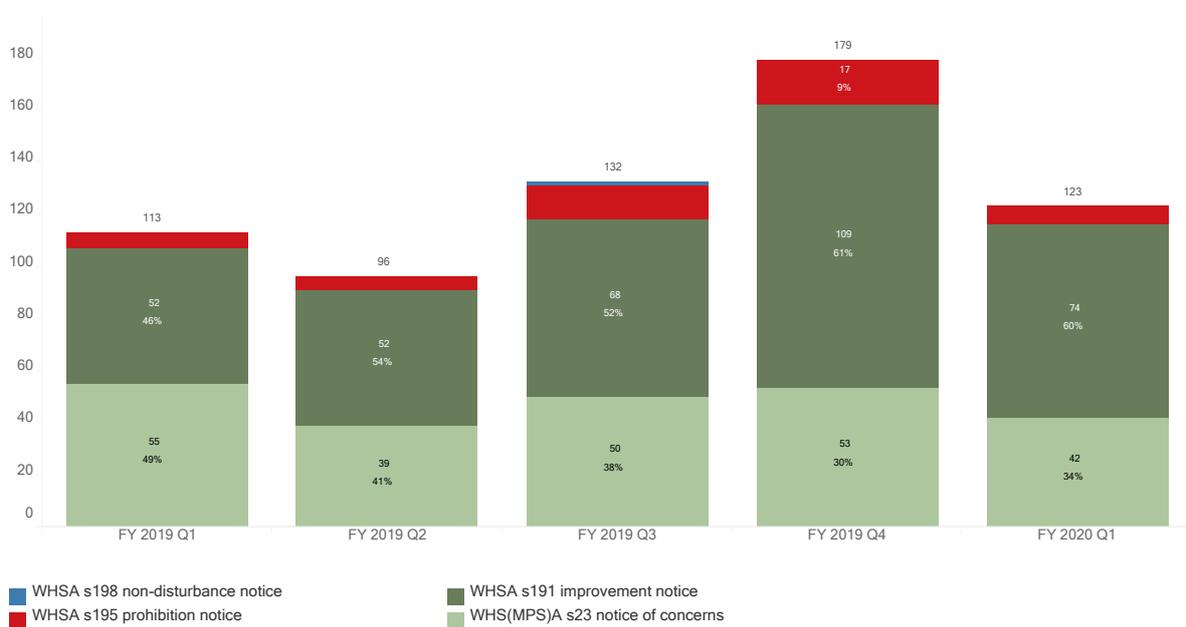
## SAFETY NOTICES ISSUED

The graph below shows the number and types of safety notices issued in the large mines and quarries sector during the five quarters since July 2018.

In the current quarter (FY 2020 Q1) the NSW Resources Regulator issued 123 safety notices in the large mines and quarries sector. This represents a 31% decrease from the previous quarter which is in part related to the state-wide blitz that was conducted that quarter (June 2019).

Nearly two thirds (60%) were improvement notices and just over one third were notices of concern and 6% (7 of 179) prohibition notices. This equates to the NSW Resources Regulator issuing on average one prohibition notice for every 10 improvement notices.

**FIGURE 30. LARGE MINES AND QUARRIES SECTOR SAFETY NOTICES ISSUED JULY 2018 TO SEPTEMBER 2019**



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# Spotlight on large mines and quarries sector

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## Collapse or subsidence of mine fill at underground metals mine

On 6 July 2019, an incident occurred at Perilya Broken Hill's Southern Operations mine when an open void was found in the floor of a drive by a loader operator, after dirt was seen to fall away in front of the loader bucket.

The crown pillar of a stope at a lower level had collapsed when it was being mined in September 2018. The mine operator had investigated the sand inrush that followed the crown pillar collapse, but did not implement controls to prevent persons from working in the level above. There had been similar previous incidents at the mine, about which discussions had been held with the Resources Regulator in early 2018. Although the mine operator had prepared a principal hazard management plan for subsidence, it did not describe the required controls, nor did the mine operator implement controls that could have prevented workers being exposed to the risk of falling into a void. The NSW Resources Regulator's compliance response required the mine operator to address these safety concerns.

Mine operators are reminded that in accordance with the clauses 23 (2) and 24 (3) (f) of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 any risk assessment on a principal hazard must involve a systematic and comprehensive analysis of all aspects of risk to health and safety associated with the principal hazard. Further, any principal hazard management plan must describe all control measures to be implemented to manage risks to health and safety associated with the principal hazard. Mine operators need to be thorough in identifying and implementing control measures in order to reduce the risk of harm to as low as is reasonably practicable.



# Small mines and quarries sector

## Small mines and quarries sector safety profile

In the current quarter, there were 2,661 active small mines and quarries in NSW. Most of these small mines are surface operations (2,623 from 2,661, or approximately 99%).

Of the surface operations, 1,767 are classed as intermittent; 727 are classed as open; 97 are classed as under care and maintenance, two are classed as open tourist mines and 30 are planned.

## Safety incident notifications

Legislation requires mine operators to notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. (See Appendix 1 for legislative detail)

As presented in the table below, incident rates (numbers of incidents reported per active mine) have remained relatively stable during the past 15 months. On average 1.2% of small mines notify safety incidents. During the past five quarters, on average 27 individual small mines reported safety incidents to the NSW Resources Regulator.

See Appendix 2 for details on number of active mines and notifying mines.

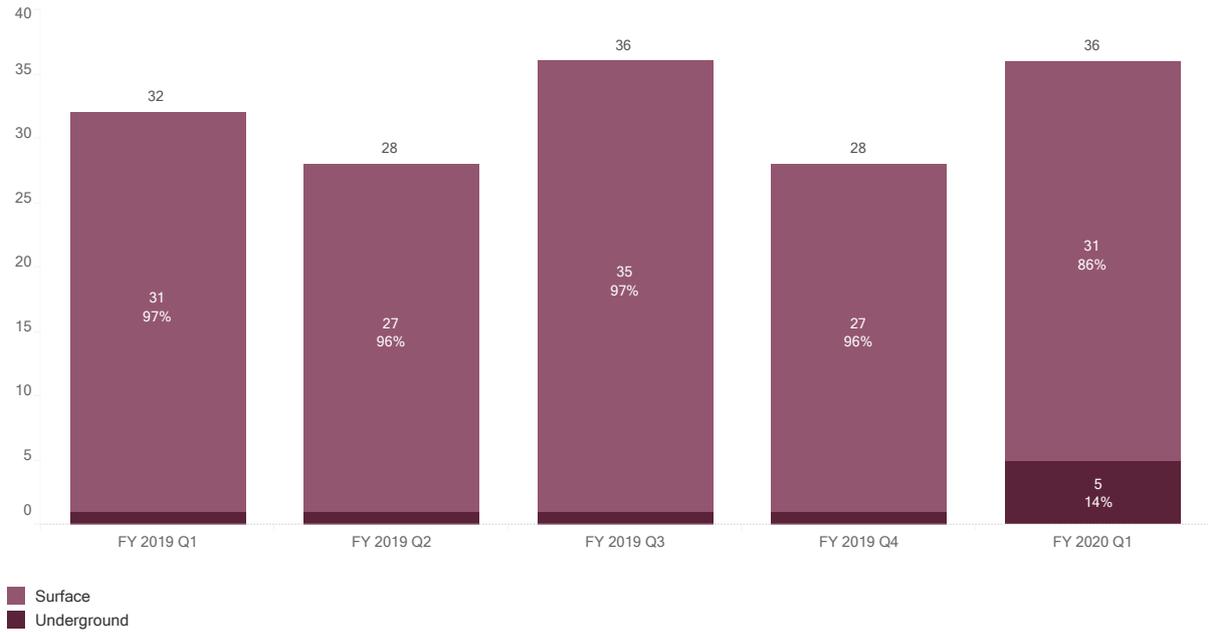
**TABLE 7. SMALL MINES AND QUARRIES SAFETY INCIDENT NOTIFICATION RATES JULY 2018 TO SEPTEMBER 2019**

MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Incidents	32	28	36	28	36	32
Active mines	2,645	2,633	2,653	2,648	2,661	2,648
Incident rate per active mine	0.012	0.011	0.014	0.011	0.014	0.012
Mines that notified incidents	28	26	30	21	28	26.6
% of mines notifying an incident	1.06%	0.99%	1.13%	0.79%	1.05%	1.00%
Incident rate per notifying mine	1.143	1.077	1.200	1.333	1.286	1.203

The graph below shows the number of safety incident notifications received during the past five quarters from the small mines and quarries sector. Of note these are small numbers of notifications so a trend cannot be easily ascertained.

In the current quarter (FY 2020 Q1), the NSW Resources Regulator received 36 safety incident notifications from the small mines and quarries sector, which is consistent with the average of 32 incident notifications during the last five quarters.

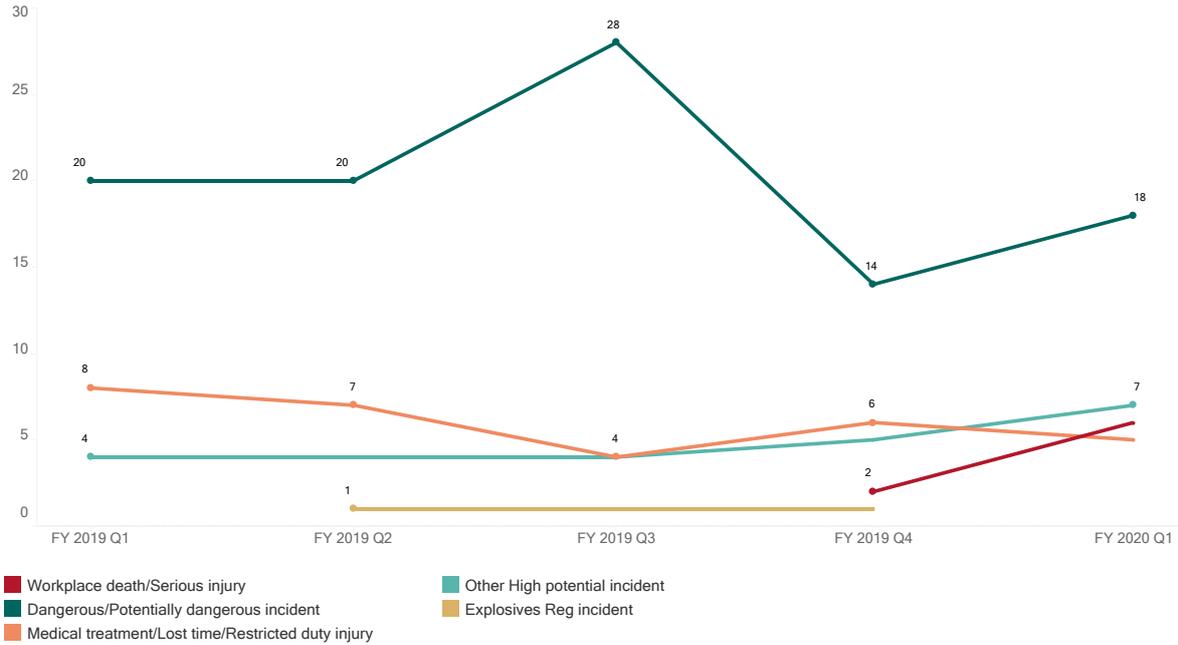
**FIGURE 31. SMALL MINES SECTOR INCIDENT NOTIFICATIONS BY OPERATION TYPE JULY 2018 TO SEPTEMBER 2019**



The graph below shows the number of safety incidents notifications received during the past five quarters from the small mines sector.

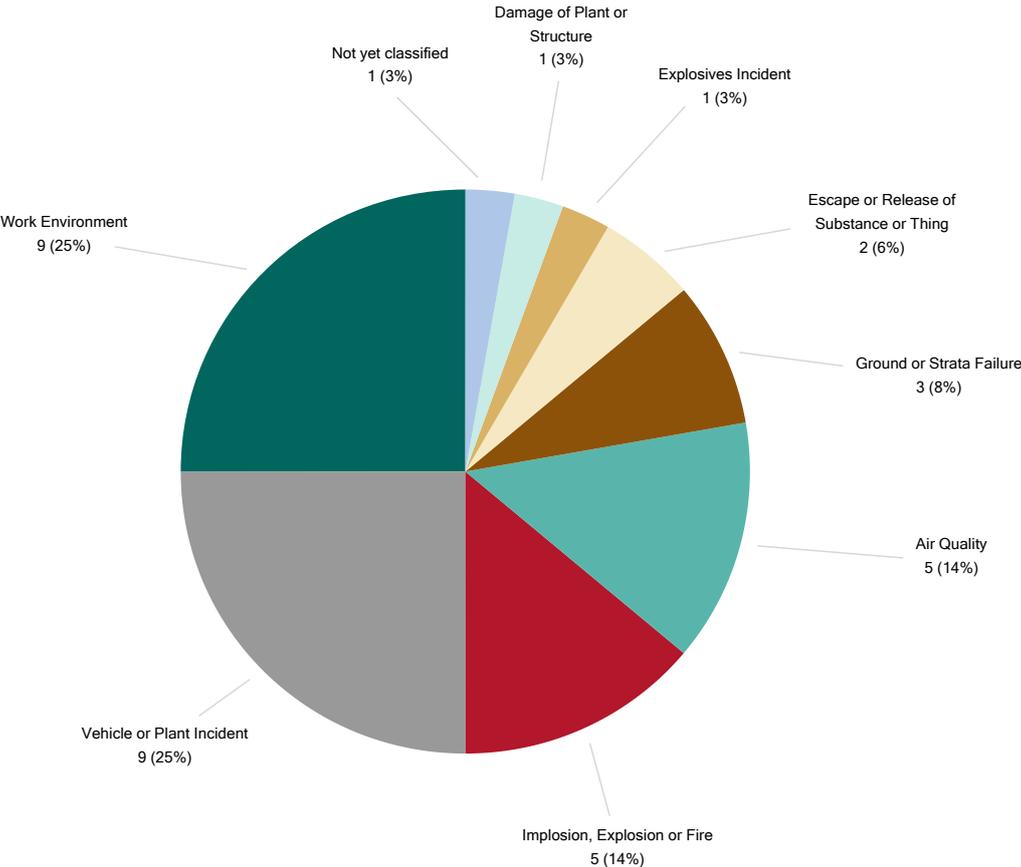
Majority of safety incidents for the small mines sector relate to dangerous/potentially dangerous incident.

**FIGURE 32. SMALL MINES SECTOR SAFETY NOTIFICATIONS BY INCIDENT TYPE JULY 2018 TO SEPTEMBER 2019**



Of the 36 safety incident notifications received in the current quarter (FY 2020 Q1), 25% were classified as work environment, 25% vehicle or plant and approximately 14% implosion, explosion or fire. Work environment incidents include (but are not limited to) slips, trips and falls, falling flying objects, fall from heights, ventilation and noise.

**FIGURE 33.** SMALL MINES AND QUARRIES SECTOR SAFETY NOTIFICATIONS BY INCIDENT TYPE CLASSIFICATION JULY 2019 TO SEPTEMBER 2019



# Small mines and quarries sector compliance activities

## SAFETY ASSESSMENTS

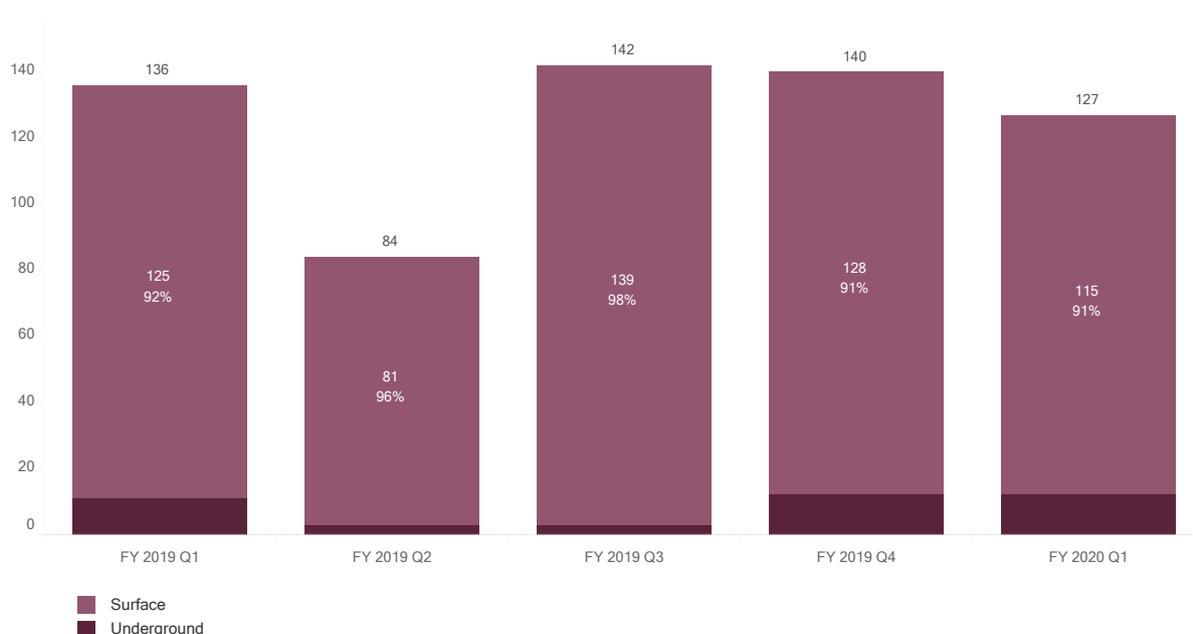
### SAFETY ASSESSMENTS BY OPERATION TYPE

The graph below, shows the number of safety assessments conducted by the NSW Resources Regulator in underground and surface operations in the small mines and quarries sector in the past five quarters since July 2018.

This shows that most small mines and quarries assessments were in surface operations during the past five quarters. This is not unexpected given that almost all small mines and quarries are surface operations.

In the current quarter (FY 2020 Q1), 91% of all small mines and quarries assessments were in surface operations.

**FIGURE 34.** SMALL MINES SAFETY ASSESSMENTS BY OPERATION JULY 2018 TO SEPTEMBER 2019



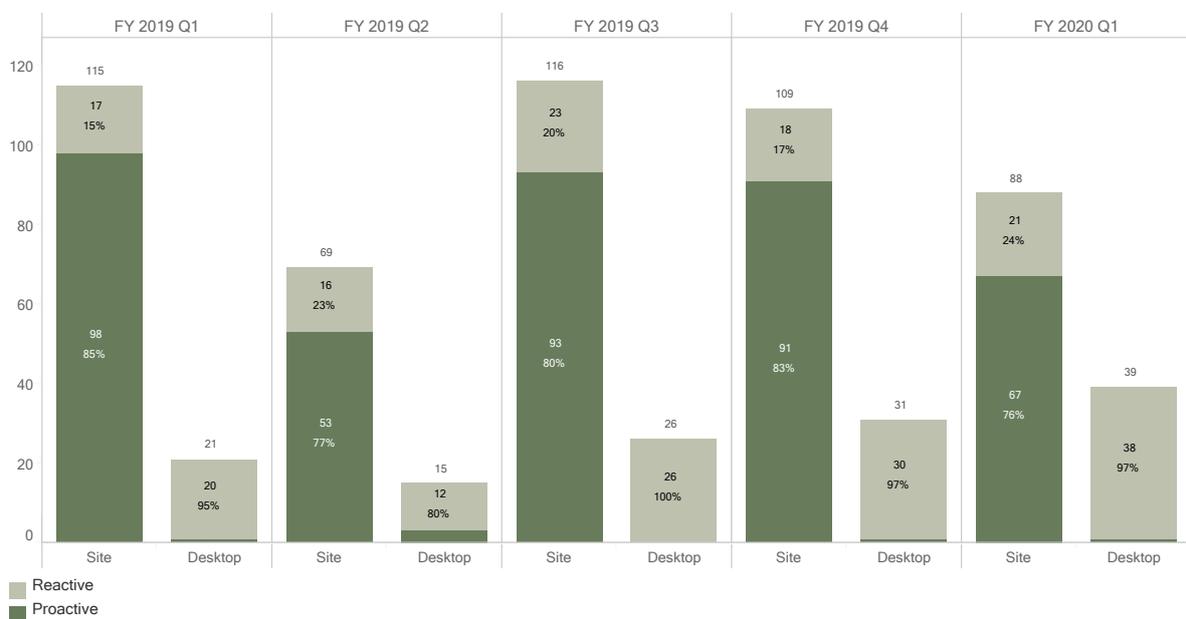
## PROACTIVE AND REACTIVE SAFETY ASSESSMENTS BY CATEGORY

The graph below shows the proportion of site and desktop safety assessments undertaken in the small mines and quarries sector for the five quarters since July 2018 that were classified as reactive (incident investigation) or proactive (planned, risk-based interventions).

In the current quarter 76% (67 of 88) of site assessments in small mines and quarries were proactive in nature. Over the past five quarters, the NSW Resources Regulator conducted 418 proactive site-based assessments, representing 84% of all site-based assessments.

On average, about 82 proactive assessments were conducted each quarter, representing nearly 65% of all assessments in this sector. In the current quarter, 54% (68 of 127) of assessments were classified as proactive in the small mines and quarries sector.

**FIGURE 35. SMALL MINES AND QUARRIES SECTOR SAFETY ASSESSMENTS BY CATEGORY AND NATURE JULY 2018 TO SEPTEMBER 2019**



The table below, shows the TAPs conducted during the three-month reporting period in the small mines and quarries sector. Since July 2019, the NSW Resources Regulator has conducted one TAP in this sector on the principal hazard 'ground and strata failure'.

**TABLE 8. SMALL MINES AND QUARRIES TARGETED ASSESSMENT PROGRAMS CONDUCTED JULY 2018 TO SEPTEMBER 2019**

HAZARD	SECTOR	MINE
Ground and strata failure	Small mines, underground	Dargues Gold Mine

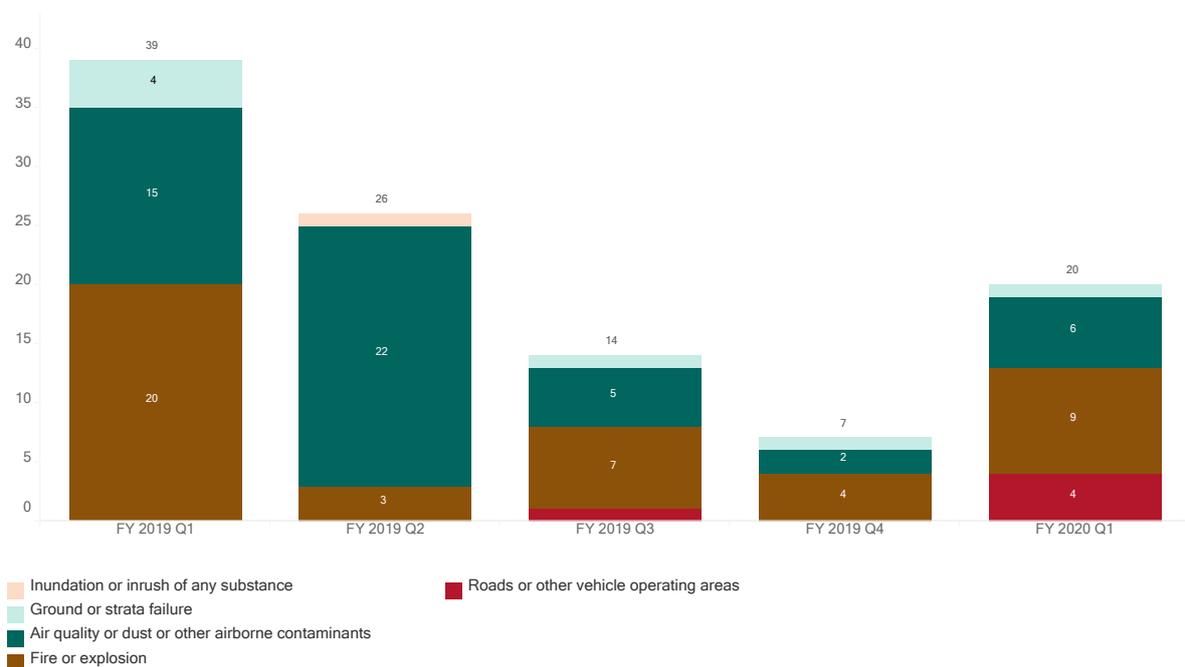


## PLANNED INSPECTIONS

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

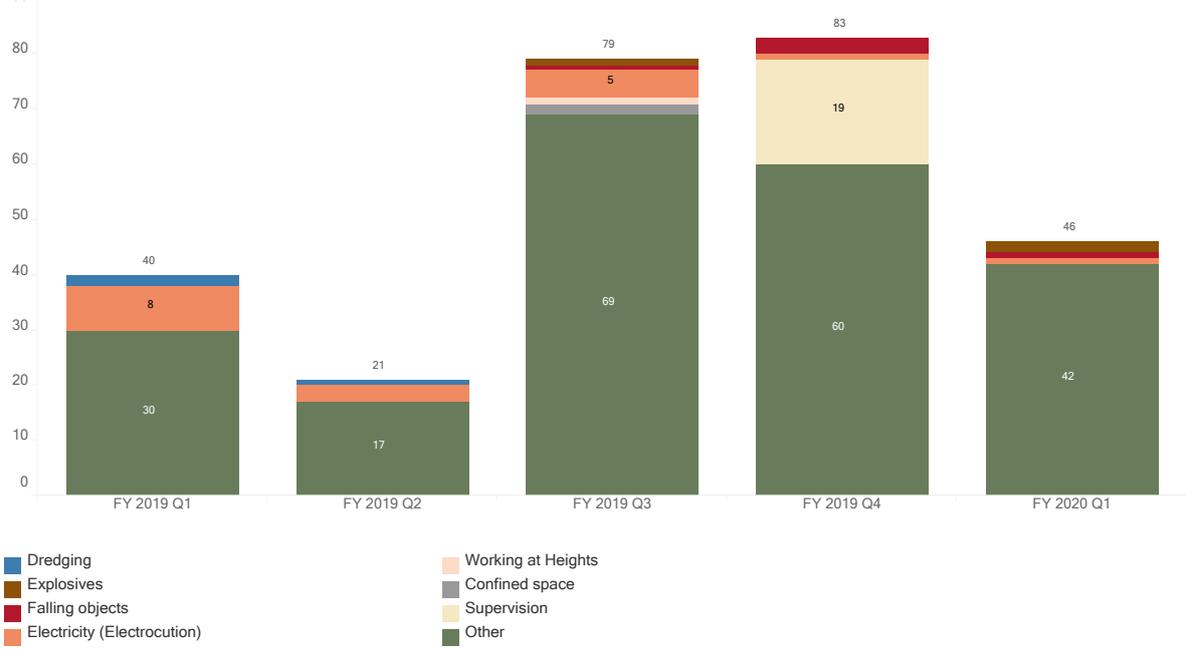
In the current quarter, 20 planned inspections were conducted on the principal hazards shown in the graph below. Almost half of the planned inspections were conducted on 'fire or explosion'. Almost one third was on 'air quality or other airborne contaminants' and 20% were on 'roads and other vehicle operating areas'. All three were important programs of work this quarter in the small mines and quarries sector.

**FIGURE 36. SMALL MINES AND QUARRIES PLANNED INSPECTIONS ON PRINCIPAL HAZARDS JULY 2018 TO SEPTEMBER 2019**



In the current quarter, 46 planned inspections were conducted on other hazards shown in the graph below. Most of the 'other' category relates to general safety inspections.

**FIGURE 37.** SMALL MINES PLANNED INSPECTIONS ON OTHER HAZARDS JULY 2018 TO SEPTEMBER 2019



### SAFETY NOTICES ISSUED

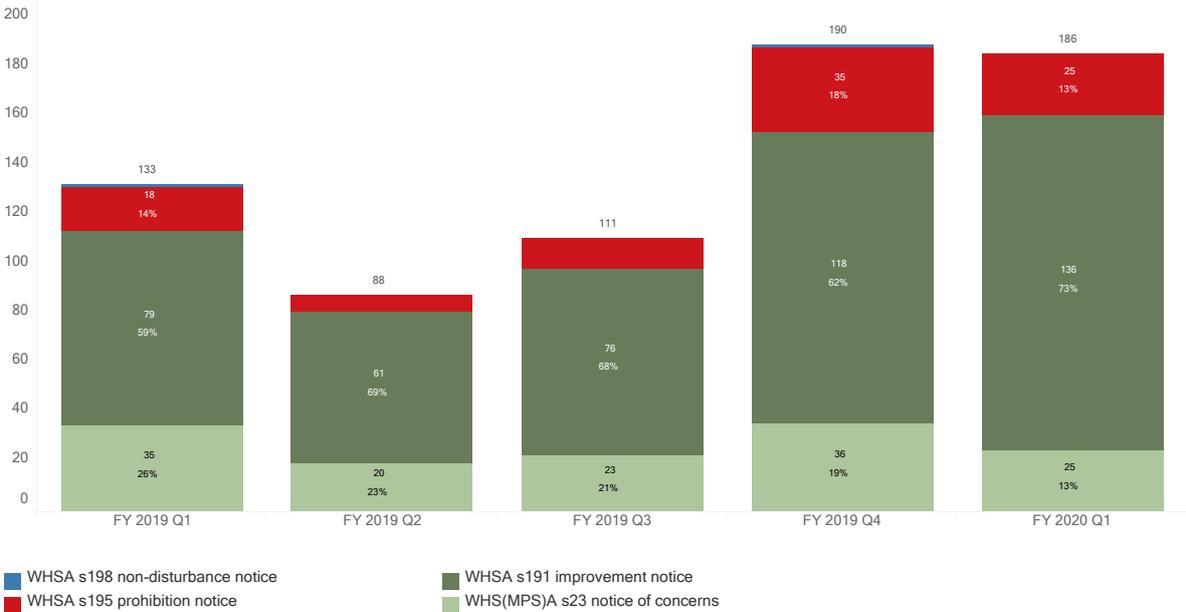
The graph below, shows the number and types of notices by the NSW Resources Regulator in the five quarters since July 2018 in the small mines and quarries sector.

In the current quarter (FY 2020 Q1), the NSW Resources Regulator issued 186 safety notices, a 40% increase when compared to the same quarter (FY 2019 Q1) last year.

The number of notices issued during the five quarters does vary but there has been an apparent upward trend in notices during the last two quarters (FY 2019 Q4 and FY 2020 Q1). The variability seen is, in part, a reflection of the nature of inspection activity. In addition, the NSW Resources Regulator is currently undertaking compliance programs in the sector focussed on priority areas which would account for the recent increase.

In the current quarter, of the 186 notices issued, 136 (73%) were improvement notices and 13% (25 of 186) were prohibition notices. This equates to the NSW Resources Regulator issuing, on average, one prohibition notice, to approximately every five improvement notices.

**FIGURE 38. SMALL MINES SECTOR SAFETY NOTICES ISSUED JULY 2018 TO SEPTEMBER 2019**



# Spotlight on small mines and quarries sector



State-wide targeted intervention on worker dust risks at quarries

## EMERGING SAFETY ISSUE - WORKER DUST RISKS AT QUARRIES

Long-term exposure to high concentrations of dust generated by mining and quarrying activities can cause disabling lung diseases such as silicosis (caused by respirable silica dust). Quarries use numerous processes to produce their product. Blasting, loading, crushing, screening, conveying and stockpiling processes generate dust. Quarry operators must have appropriate controls in place to protect the health of their workers from this risk.

In response to recent personal exposure monitoring exceedances for dust and airborne contaminants and late / non-reporting by mine operators, the Resources Regulator launched a state-wide targeted intervention. The campaign focused on quarry worker safety and exposure to dust. The program commenced in September 2019 and involved unannounced site visits. Inspectors looked at workplace dust hazards, effectiveness of dust control measures and personal exposure monitoring sampling programs and reporting. A copy of the report can be [viewed here](#).

People in control of quarrying operations must ensure that workers are not exposed to atmospheric concentrations of airborne dust that exceed the national standards. The best way to do this is to control dust at the source – the point where the dust is generated. The mine's dust control plan needs to outline which dust controls are needed and exactly how dust controls should be maintained. Personal exposure monitoring is an important component of the plan as it provides information about the effectiveness of these controls.

Need more information about which dust controls are the most effective? [Dust safety in the metals and extractives industries](#) information booklet is available on our website.



# Opal mines sector

## Opal mines safety profile

As at the end of September (FY 2020 Q1), there were 3,733 active opal mines in NSW. Almost all the opal mine sector is composed of underground, small-scale titles. The remote location and nature of the sector makes health and safety regulation in the sector, challenging.

The NSW Resources Regulator's small mine team continues to engage with operators, the Lightning Ridge miner's association, and the White Cliffs miner's association' to improve safety performance and reporting in opal mines.

## Safety incident notifications

Legislation requires mine operators to notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. See Appendix 1 for legislative detail.

In the current quarter, there was one incident notified to the NSW Resources Regulator in the opal mine sector.

See Appendix 2 for details on numbers of active mines and notifying mines.

**TABLE 9. OPAL MINES SECTOR SAFETY INCIDENT NOTIFICATION RATES  
JULY 2018 TO SEPTEMBER 2019**

MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Incidents	2	2	0	1	2	1
Active mines	3,459	3,436	3,522	3,564	3,733	3,543
Incident rate per active mine	0.001	0.001	0.000	0.000	0.001	0.000
Mines that notified incidents	2	2	0	1	2	1.4
% of mines notifying an incident	100%	100%	0%	100%	100%	100%
Incident rate per notifying mine	1.000	1.000	0.000	1.000	1.000	1.000

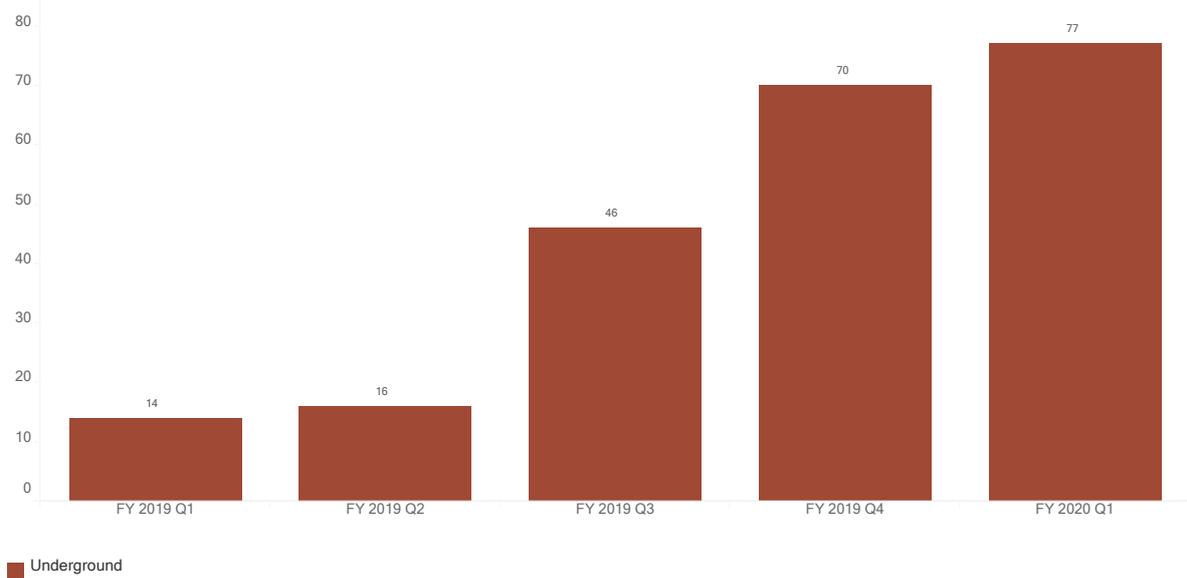
# Opal mines sector compliance activities

## SAFETY ASSESSMENTS CONDUCTED

### SAFETY ASSESSMENTS

The graph below shows the number of safety assessments conducted by the NSW Resources Regulator in underground operations in the opal mines sector in the past five quarters since July 2018.

**FIGURE 39.** OPAL MINES SAFETY ASSESSMENTS BY UNDERGROUND OPERATION JULY 2018 TO SEPTEMBER 2019

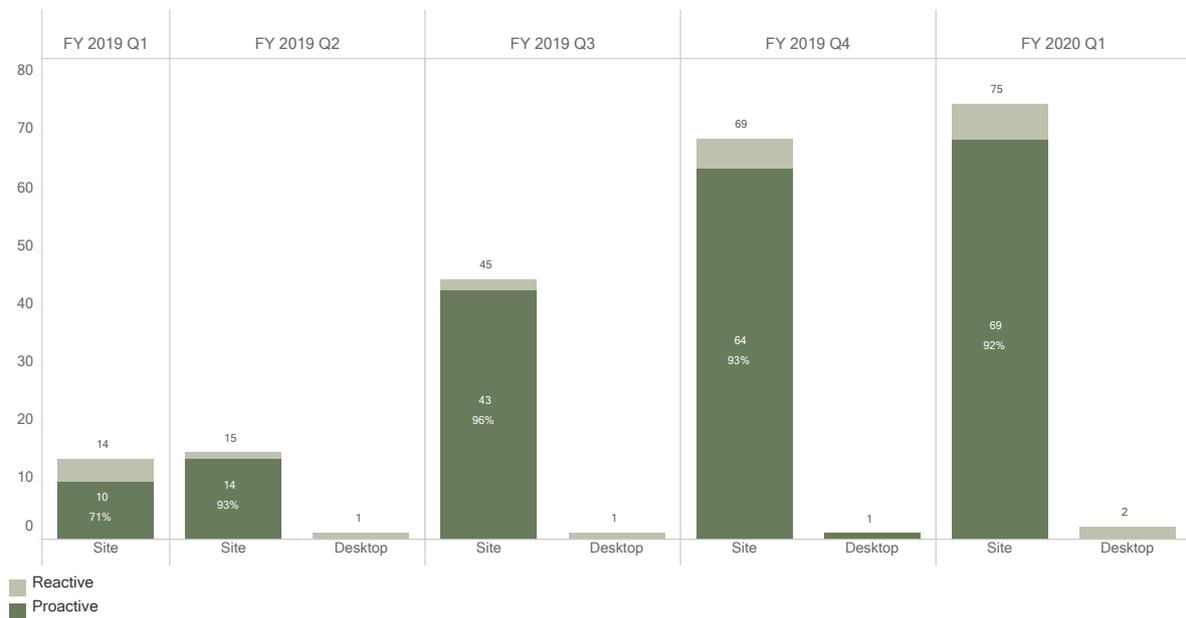


## PROACTIVE AND REACTIVE SAFETY ASSESSMENTS CONDUCTED BY CATEGORY

The graph below shows the proportion of site and desktop safety assessments undertaken in the opal mines sector for the five quarters since July 2018 that were classified as reactive (incident investigation) or proactive (planned, risk-based interventions). Site-based proactive assessments have been on the increase for the past three quarters.

On average, about 40 proactive assessments were conducted each quarter, representing 90% of all assessments. In the current quarter, 90% (69 of 77) of assessments were classified as proactive in the opal mines sector.

**FIGURE 40.** OPAL MINES AND QUARRIES SECTOR SAFETY ASSESSMENTS BY CATEGORY AND NATURE JULY 2018 TO SEPTEMBER 2019

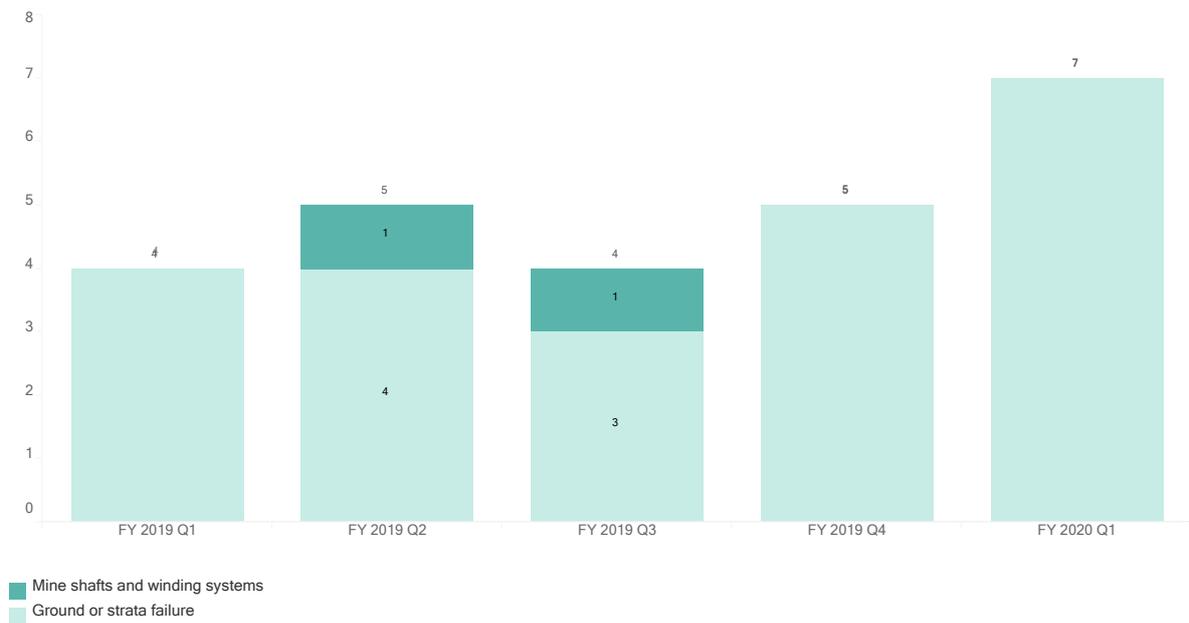


## PLANNED INSPECTIONS

Planned inspections assist to identify potential compliance weaknesses which could lead to an incident or injury. These with targeted assessments follow a pre-prepared plan focusing on a specific hazard including principal mining control plans.

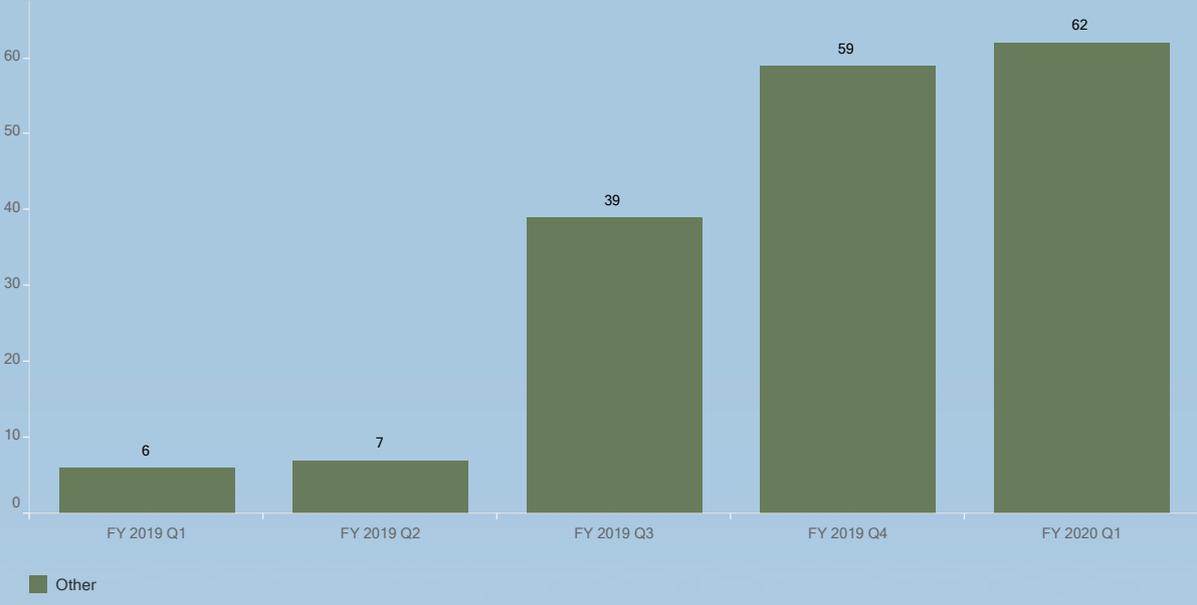
As show in the graph below, all seven planned inspections conducted in the current quarter were on the principal hazard 'ground and strata failure'. This was an important program of work this quarter in the opal mines sector.

**FIGURE 41.** OPAL MINES AND QUARRIES PLANNED INSPECTIONS ON PRINCIPAL HAZARDS JULY 2018 TO SEPTEMBER 2019



As shown below, in the current quarter, an additional 62 planned inspections (general inspections) were conducted in the opal mines sector.

**FIGURE 42.** OPAL MINES PLANNED INSPECTIONS CONDUCTED ON OTHER HAZARDS JULY 2018 TO SEPTEMBER 2019



## SAFETY NOTICES ISSUED

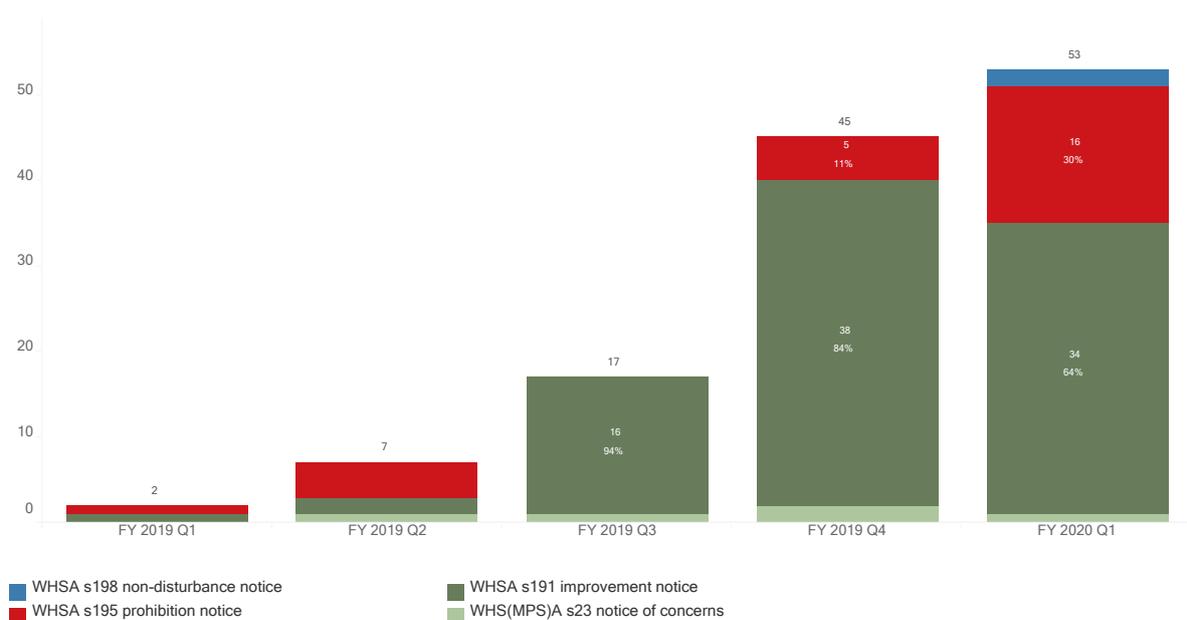
The graph below, shows the number and types of notices by the NSW Resources Regulator in the five quarters since July 2018 in the opal mines sector.

In the current quarter (FY 2020 Q1), the NSW Resources Regulator issued 53 safety notices, an increase of 51 safety notices when compared to the same quarter (FY 2019 Q1) last year.

The number of notices issued during the five quarters does vary but there has been an apparent upward trend in notices. The variability seen is, in part, a reflection of the nature of inspection activity. In addition, the NSW Resources Regulator is currently undertaking proactive compliance programs in the sector focussed on priority areas which would account for the recent increase.

In the current quarter, of the 53 notices issued, 34 (64%) were improvement notices, 16 (30%) were prohibition notices, two were non-disturbance notices and one matter of concern. This equates to the NSW Resources Regulator issuing, on average, one prohibition notice, to approximately every two improvement notices.

**FIGURE 43.** OPAL MINES SECTOR SAFETY NOTICES ISSUED JULY 2018 TO SEPTEMBER 2019



## SAFETY NOTICES ISSUED IN ASSESSMENTS CONDUCTED

The table below shows the number of assessments conducted and notices issued by the NSW Resources Regulator for the opal mine sector during the last five quarters.

In this quarter (FY 2020 Q1), the NSW Resources Regulator issued 53 safety notices (representing approximately 18% of all industry safety notices issued) and conducted 77 safety assessments (representing approximately 9% all industry safety assessments).

**TABLE 10. OPAL SAFETY NOTICES ISSUED AND ASSESSMENTS  
JULY 2019 TO SEPTEMBER 2019**

	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Safety assessments conducted	2	7	17	45	53	24.8
Safety notices issued (s23, s191, s195 and s198 notices issued)*	14	16	46	70	77	44.6
Notice issue rate per assessment	0.14	0.44	0.37	0.64	0.69	0.56

\* Sections 191, 195 and 198 of the *Work Health and Safety Act 2011* and section 23 *Work Health and Safety (Mines and Petroleum Sites) Act 2013*

# Petroleum and geothermal sector

## Petroleum and geothermal sector safety profile

As at the end of September (FY 2020 Q1), there were 259 active (open or intermittent) and six planned, petroleum and geothermal sites in NSW. All 265 were surface operations.

## Safety incident notifications

Legislation requires mine operators to notify the NSW Resources Regulator about the occurrence of certain types of safety incidents. See Appendix 1 for legislative detail.

The table below shows the lack of safety incident notifications received during the past five quarters from the petroleum and geothermal sector.

See Appendix 2 for details on numbers of active mines and notifying mines.

**TABLE 11. PETROLEUM AND GEOTHERMAL NOTIFIED SAFETY INCIDENTS  
JULY 2018 TO SEPTEMBER 2019**

	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Number of incidents notified	0	0	0	0	0	0
All sectors – total notified incidents	480	539	513	495	561	518



## Petroleum and geothermal sector compliance activities

The table below shows the number of safety assessments conducted by the NSW Resources Regulator during the 15-month reporting period since July 2018 for the petroleum and geothermal sector. The average of assessments conducted in this sector during the 15-month reporting period is 33 assessments a quarter.

In quarter one FY 2020, the NSW Resources Regulator conducted 32 safety assessments with no notices issued.

**TABLE 12. PETROLEUM AND GEOTHERMAL ASSESSMENTS JULY 2018 TO SEPTEMBER 2019**

	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Number of assessments	32	28	33	39	32	33
All sectors – total assessments	692	568	938	840	869	781

# Exploration sector

As at the end of September (FY 2020 Q1), there were 791 active (which includes open, intermittent, and under care and maintenance) and 24 planned exploration sites excluding petroleum and geothermal in NSW. All sites in this sector are surface exploration sites.

## Safety incident notifications

As presented in the table below, incident rates (numbers of incidents reported per notifying mine) have remained relatively stable during the past 15 months. During the past five quarters, on average one individual mine reported safety incidents to the NSW Resources Regulator.

**TABLE 13.** EXPLORATION SECTOR SAFETY INCIDENT NOTIFICATIONS AND MINE REPORTING RATES IN NSW JULY 2018 TO SEPTEMBER 2019

MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	AVERAGE
Incidents	3	2	1	0	0	2
Active mines	705	712	744	753	791	741
Incident rate per active mine	0.004	0.003	0.001	0.000	0.000	0.003
Mines that notified incidents	3	2	1	0	0	1.2
% of mines notifying an incident	0.43%	0.28%	0.13%	0.00%	0.00%	0.16%
Incident rate per notifying mine	1.000	1.000	1.000	0.000	0.000	1.667



## Exploration sector compliance activities

### EXPLORATION SAFETY ASSESSMENTS AND NOTICES

The table below shows the number of safety assessments conducted by the NSW Resources Regulator during the 15-month reporting period since July 2018 for the exploration sector.

In quarter one FY 2020, the NSW Resources Regulator conducted two safety assessments with two notices issued.

**TABLE 14.** EXPLORATION NOTICES ISSUED AND ASSESSMENTS  
JULY 2019 TO SEPTEMBER 2019

	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	TOTAL
Safety assessments conducted	5	1	1	0	2	9
Safety notices issued (s23, s191, s195 & s198 notices issued)*	3	2	0	0	2	7

\* Sections 191, 195 and 198 of the *Work Health and Safety Act 2011* and section 23 *Work Health and Safety (Mines and Petroleum Sites) Act 2013*

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# Appendices

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## Appendix 1 - NSW Safety incident notification legislation

INCIDENT NOTIFICATION	LEGISLATION
Workplace Death	<i>s.14(a) Work Health and Safety (Mines and Petroleum sites) Act 2013</i>
Serious Injury or Illness	<i>s.14(b) Work Health and Safety (Mines and Petroleum sites) Act 2013</i>
Dangerous incident	<i>s.14(c) Work Health and Safety (Mines and Petroleum sites) Act 2013</i>
Medical Treatment Injury	cl.128(1)(a) Work Health and Safety (Mines and Petroleum sites) Regulation 2014
High Potential Incident	cl.128(1)(b) Work Health and Safety (Mines and Petroleum sites) Regulation 2014
Explosives Reg Notifications	cl.102 Explosives Regulation 2013 cl.103 Explosives Regulation 2013
Coal Industry Act Reportable Events	<i>s.45 Coal Industry Act 2001</i> A reportable event at a mine rescue station.

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## Appendix 2 - Safety incident notification rates by sector

SECTOR	MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	QUARTER AVERAGE
Coal Mines	Incidents	374	432	397	390	444	407
	Active mines	109	114	121	123	122	118
	Incident rate per active mine	3.431	3.789	3.281	3.171	3.639	3.458
	Mines that notified incidents	52	58	54	55	61	56
	% of mines notifying an incident	48%	51%	45%	45%	50%	48%
	Incident rate per notifying mine	7.192	7.448	7.352	7.091	7.279	7.275
Large mines	Incidents	69	75	79	76	79	76
	Active mines	37	37	36	38	37	37
	Incident rate per active mine	1.865	2.027	2.194	2.000	2.135	2.043
	Mines that notified incidents	19	22	21	25	22	21.8
	% of mines notifying an incident	51%	59%	58%	66%	59%	59%
	Incident rate per notifying mine	3.632	3.409	3.762	3.040	3.591	3.468
Small mines	Incidents	32	28	36	28	36	32
	Active mines	2,645	2,633	2,653	2,648	2,661	2,648
	Incident rate per active mine	0.012	0.011	0.014	0.011	0.014	0.012
	Mines that notified incidents	28	26	30	21	28	26.6
	% of mines notifying an incident	1.06%	0.99%	1.13%	0.79%	1.05%	1.00%
	Incident rate per notifying mine	1.143	1.077	1.200	1.333	1.286	1.203

SECTOR	MEASURE	FY 2019 Q1	FY 2019 Q2	FY 2019 Q3	FY 2019 Q4	FY 2020 Q1	QUARTER AVERAGE
Petroleum & Geothermal sites	Incidents	0	0	0	0	0	0
	Active mines	265	267	266	267	265	266
	Incident rate per active mine	0.000	0.000	0.000	0.000	0.000	0.000
	Mines that notified incidents	0	0	0	0	0	0
	% of mines notifying an incident	0	0	0	0	0	0
	Incident rate per notifying mine	0.000	0.000	0.000	0.000	0.000	0.000
Opal mines	Incidents	2	2	-	1	2	1
	Active mines	3,459	3,436	3,522	3,564	3,733	3,543
	Incident rate per active mine	0.001	0.001	0.000	0.000	0.001	0.000
	Mines that notified incidents	2	2	0	1	2	1.4
	% of mines notifying an incident	100%	100%	0%	100%	100%	100%
	Incident rate per notifying mine	1.000	1.000	0.000	1.000	1.000	1.000
Exploration sites	Incidents	3	2	1			2
	Active mines	705	712	744	753	791	741
	Incident rate per active mine	0.004	0.003	0.001	0.000	0.000	0.003
	Mines that notified incidents	3	2	1	0	0	1.2
	% of mines notifying an incident	0.43%	0.28%	0.13%	0.00%	0.00%	0.16%
	Incident rate per notifying mine	1.000	1.000	1.000	0.000	0.000	1.667
All sectors	Incidents	480	539	513	495	561	518
	Active mines	7,220	7,199	7,342	7,393	7,609	7,353
	Incident rate per active mine	0.066	0.075	0.070	0.067	0.074	0.070
	Mines that notified incidents	104	110	106	102	113	107
	% of mines notifying an incident	1.44%	1.53%	1.44%	1.38%	1.49%	1.46%
	Incident rate per notifying mine	4.62	4.90	4.84	4.85	4.96	4.84

