

Commissioner for Mine Safety and Health

Annual performance report 2018–19



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31 October 2019

The Honourable Dr Anthony Lynham MP
Minister for Natural Resources, Mines and Energy
1 William Street
Brisbane Qld 4000

Dear Minister

In accordance with section 73E(1) of the *Coal Mining Safety and Health Act 1999*, I am pleased to submit to you the Commissioner for Mine Safety and Health's annual performance report for the year ending 30 June 2019.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Kate du Preez', with a long horizontal flourish extending to the right.

Kate du Preez
Commissioner for Mine Safety and Health

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BACKGROUND

The office of the Commissioner for Mine Safety and Health is established under the *Coal Mining Safety and Health Act 1999* and the relevant provisions commenced under this Act and the *Mining and Quarrying Safety and Health Act 1999* on 1 July 2009.

The functions of the Commissioner for Mine Safety and Health are to:

- advise the Minister for Natural Resources, Mines and Energy on mine safety and health matters generally
- fulfil the roles of chair of the Coal Mining Safety and Health Advisory Committee under the *Coal Mining Safety and Health Act 1999* and chair of the Mining Safety and Health Advisory Committee under the *Mining and Quarrying Safety and Health Act 1999*
- monitor and report to the Minister for Natural Resources, Mines and Energy and to the Queensland Parliament on the administration of provisions about safety and health under the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*
- perform the functions given to the Commissioner under the provisions of the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*.

In addition, the Commissioner is required under section 73E(1) of the *Coal Mining Safety and Health Act 1999* to provide a report to the Minister for Natural Resources, Mines and Energy on the performance of the Department of Natural Resources, Mines and Energy in regulating mine safety.

The Queensland Mines Inspectorate forms part of the Resources Safety and Health division of the department and is primarily responsible for enforcing the provisions of the *Coal Mining Safety and Health Act 1999*, *Coal Mining Safety and Health Regulation 2017*,¹ *Mining and Quarrying Safety and Health Act 1999* and *Mining and Quarrying Safety and Health Regulation 2017*.² The inspectorate also advises, mentors and educates the mining industry about safety and health. The Occupational Health and Hygiene and Simtars

business units of Resources Safety and Health are also responsible for enforcing certain aspects of the mine safety and health legislative framework.

The activities of the department in the regulation of safety and health in the mining industry for 2018–19 are summarised in the body of this report. In addition, information on the operations of the Board of Examiners, the advisory committees and more comprehensive mining industry safety and health information can be obtained in the following reports:

- Board of Examiners annual report
- Coal Mining Safety and Health Advisory Committee annual report
- Mining Safety and Health Advisory Committee annual report
- Queensland Mines and Quarries Safety Performance and Health report
- Department of Natural Resources, Mines and Energy annual report.

These reports can be downloaded from the Queensland Government publications website at www.publications.qld.gov.au.

1 Including the 19 recognised standards published on the Business Queensland website at www.business.qld.gov.au

2 Including the three guidelines published on the Business Queensland website at www.business.qld.gov.au

FROM THE COMMISSIONER

It has been a tragic year for Queensland's mining and quarrying industry. We experienced five fatalities in 2018–19 (with a sixth in early July 2019). I would like to express my most sincere sympathies to the families, friends and colleagues of these men. As an industry, we have a responsibility to ensure everyone who goes to work returns home in the same condition in which they arrived.

These deaths have caused considerable reflection and contemplation within the industry about what it means to say *safety is our number one priority*. Are we doing enough to protect workers? Has our mining and quarrying safety and health legislation kept up with the rapid changes in the industry and technologies that we use? Is our safety and health culture appropriate? Do we have the capacity and commitment to continue to improve safety and health standards in our mines and quarries?

The reality is that safety and health outcomes in the industry have plateaued and, in some measures, have started to show signs of reversing momentum. The frequency rate of serious accidents experienced in our mines has increased every year for the past five years from 0.59 serious accidents per million hours worked in 2014–15 to 1.02 in 2018–19.

However, the fact that no one was injured as a result of the underground spontaneous combustion event at North Goonyella coal mine near Moranbah and the subsequent sealing is testament to how far the industry has come in real terms in mine safety over the past 25 years. We have much to learn from an industry, inspectorate and workers' perspective from reviewing the causes of this event. A number of investigations and reviews are already under way and I await the outcomes and recommendations.

The occurrence of so many serious incidents in such a short period of time has resulted in a difficult year for the Queensland Mines Inspectorate. This number of events is unprecedented since the introduction of the modern Queensland mining and quarrying legislation in 1999 and the need to thoroughly investigate the nature and cause of each incident has understandably stretched the inspectorate's resources. That being said, the inspectorate has performed its regulatory duties with diligence, professionalism and competence in the glare of an extraordinary amount of public scrutiny. This professionalism and competence is reflected in the positive assessment of the performance of the inspectorate by the industry in a recent survey.

Mine and quarry fatalities

It is my sad duty to report that five mine and quarry workers lost their lives while working at a Queensland mine or quarry in 2018–19. A sixth worker lost his life on 7 July 2019.

On 29 July 2018, Adam Malone, a 25 year old earthmoving plant operator, was fatally injured at Jacks Quarry when he lost control of the articulated dump truck he was operating while descending from the bench to a lower level.

On 15 November 2018, Connor-Shaye Milne, a 21 year old loader operator, was fatally injured at Fairfield Quarry when he became entangled in the rotating tail drum on a conveyor belt.

On 31 December 2018, Allan Houston, a 49 year old dozer operator, was fatally injured at Saraji coal mine when the bulldozer he was driving went over the crest of a bench and rolled downwards approximately 20 metres.

On 20 February 2019, Bradley Hardwick, a 48 year old grader operator, was fatally injured at Moranbah North coal mine.

On 26 June 2019, David Routledge, a 55 year old excavator operator, was fatally injured at Middlemount coal mine when a pit wall suddenly failed and engulfed the excavator he was operating.

On 7 July 2019, Jack Gerdes, a 27 year old excavator operator, was fatally injured at Baralaba coal mine when he became entangled in the stairs of the excavator he was operating.

I would like to express my deepest sympathies to the families, friends and colleagues of these men. All Queensland mine workers have a right to go home safe and healthy every day.

Understandably, these issues have had an impact on the inspectorate, particularly with regards to coal mines, as a number of resources have had to be taken offline from normal operations to conduct detailed investigations. This has necessitated changes in the regulatory approach and has meant the inspectorate has conducted slightly less than the expected number of inspections and audits of coal mines that it planned at the beginning of the year. In relation to mineral mines and quarries, the inspectorate has exceeded its targets for inspections and audits.

However, it should be noted that while there has been a small reduction in the overall number of inspections over the past three years, such a simple focus on one aspect of the regulatory mix does not give the most accurate picture of the inspectorate's regulatory performance. Instead of a focus on the number of inspections, it is more appropriate to focus on the time inspectors have spent in the field on mine and quarry sites conducting inspections, audits, and investigating complaints and incidents. This gives a better appraisal of the regulatory effort of the inspectorate. Over the past three years, the inspectorate has increased its number of audits by 28 per cent. It has also seen a 30 per cent increase in investigations and a four per cent increase in complaints. This shows that the changes to the regulatory approach has allowed the inspectorate to increase its regulatory effort in real terms.

During the year, the inspectorate has continued to transform itself from a more traditional compliance-style regulator into a more modern, risk-based regulator that is responsive to industry trends and emerging issues and focussed on serious harms. This transformation is important to ensure it is able to adapt to changing industry conditions and has resulted in a more data-driven compliance program and more structure in the way it approaches regulation of the industry. Improvements have also been made to the way the inspectorate communicates information with the industry, with a more proactive approach being taken.

In my opinion, the inspectorate's regulatory strategy underpinning its compliance program is appropriate and addresses the main types of mining hazards evident in Queensland's mining industry. The inspectorate uses effective measures such as inspections, audits and other means to enforce or promote compliance and these regulatory practices are supported by considerable experience and capability in its workforce. Inspectors have a deliberate and concentrated focus on fatal and other serious risks and use a risk-based approach to their regulatory

activities. The inspectorate also engages broadly with mine sites and the wider industry to improve compliance outside of its planned inspection activities.

I am confident that the inspectorate has the necessary skills, experience and commitment to carry out its role and the necessary support from the department to implement the programs and legislative improvements that are needed to improve safety and health in the mining and quarrying industry.

The department has also progressed a range of legislative improvements during the year, as well as improvements to recognised standards, guidelines and guidance material. This has resulted in it now being mandatory for underground mines to employ a suitably qualified ventilation officer, and improvements to the powers of inspectors to enter and conduct inspections, investigations and audit compliance at all workplaces that have the potential to affect safety and health at mines.

The department has also continued to progress its mine dust lung disease program and I am happy to report that these reforms are progressing well. The work done by the department in establishing the online dust database and associated reporting regime, and developing the necessary systems to include data from mineral mines and quarries, is commendable.

The substantial regulatory improvements implemented over the past few years have increased the level of monitoring of mine dust across all Queensland coal mines and dust levels remain well below statutory limits. In my previous report, I outlined that the challenge for the department was to ensure that these reforms and improvements were propagated across mineral mines and quarries in addition to coal mines. The implementation of similar reforms in mineral mines and quarries is proving to have a positive effect on respirable crystalline silica levels for those operations and will only improve as the programs are embedded into the industry over time. The way the department has worked with small mineral mines and quarries to improve the understanding of the respirable dust hazard and compliance with the *Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries* is a good example of the proactive approach the department has taken in these efforts.

We also continue to have a world-class system in place that detects signs of mine dust lung disease early and provides a safety net for Queensland coal mine workers who have been

affected by these insidious diseases. The implementation of initiatives such as the Queensland Health notifiable dust lung disease register, the Miners' Health Matters website and ongoing mine dust inspection and auditing programs will only serve to further protect workers in the future. The move to wholly Australian-based providers performing health screening in 2018–19 is evidence of the success of these reforms.

Since the commencement of the current mine safety and health legislation, there have been 43³ fatalities in the Queensland mining and quarrying industry—the five fatalities experienced in 2018–19 is the highest number in a financial year since that time.

Everyone who goes to work, whether that is in a mine, a quarry or any other workplace, is entitled to return home safely to their families and friends. No death or injury on a mine or quarry site is acceptable and every workplace should be doing everything possible to protect the safety and health of its workers.

Mine operators are required to manage risk and use a hierarchy of controls to mitigate the danger posed to workers from their operations. If these risks are properly identified and managed, then the Queensland mining and quarrying industry should be able to achieve *zero harm*, or as close to zero harm as is reasonably achievable. However, a normalisation of risk seems to be creeping into the industry. It is vital that the concept of working towards zero harm does not just become rhetoric—an unachievable goal—and that the industry maintains an effective safety culture that promotes best practice and continual improvement.

Recognising a need to refocus industry's attention on improving safety culture, the Minister's first action was to call for a Safety Reset program across the entire industry during August 2019. This reset of safety culture in the industry was supported by coal mine, mineral mine and quarry operators and unions and has seen more than 52,000 mine and quarry workers in Queensland stop work to attend one of the 1197 safety and health-focussed Safety Reset sessions. Many of these Safety Reset sessions were attended by the Queensland Mines Inspectorate.

Integral to this success has been the level of *buy-in* from all levels of the industry—from boardroom to shop floor. This has illustrated to me that most people understand the importance of their safety and health obligations and

understand that the safety and health legislation was written in the shadow of disaster. The Safety Reset sessions I attended were punctuated by a number of personal stories from mine workers and I was heartened to hear that a number of operators were planning to implement the Safety Reset concept on a national scale and make it part of their ongoing programs to protect worker safety and health.

The Safety Reset program has been a crucial first step in refocusing the industry's attention to what should be everyone's number one priority—the health and safety of workers. I would like to see the industry and the inspectorate working together to ensure the momentum of the Safety Reset is not lost and improvements to safety culture across the industry are embedded into everyday practice.

This industry matters. And the people who work in it matter too; so we need to make sure that we look after them.

3 Including one fatality recorded in 2019–20

Future challenges

While this report outlines the considerable work that the department has completed in 2018–19, there are a number of future challenges that I would like to see the Queensland Mines Inspectorate and industry focus on in 2019–20 to improve the safety and health of mine and quarry workers.

The future challenges for the industry and inspectorate include:

- ensuring the momentum of the Safety Reset program is not lost and improvements to safety culture across the industry are embedded into everyday practice
- interpreting and implementing the recommendations of the reviews by the two mining safety and health advisory committees into the effectiveness of the current mining safety and health legislation
- interpreting and implementing the recommendations of the review of all coal mining and mineral mining and quarrying fatalities since the introduction of the modern legislation in 1999
- as initiated by the inspectorate, expanding the focus of the response to mine dust to address the risks of inhalable dust
- exploring the contribution that supervision plays as a factor in safety incidents
- continuing the Occupational Health and Hygiene unit's focus on hazards related to fatigue and mental health

- building a better understanding of the causation of natural cause deaths on mine sites
- understanding the potential impact of automation on safety and health
- enhancing communication with the industry to ensure vital safety and health information is disseminated effectively.

In addition, the inspectorate has made great progress in developing a comprehensive and detailed database which includes information about mine and quarry incidents, dust results and other relevant data. The database empowers inspectors to make evidence-based decisions in the regulation of the industry. The focus now must be to ensure that the data being collected is the *right* data and that the information is analysed in a way that enhances the experience and knowledge of inspectors.

Finally, one of the biggest challenges for the inspectorate in 2019–20 will be preparing for the possible transition from a division of the Department of Natural Resources, Mines and Energy into an independent statutory authority. The change will require a great deal of work, communication and consultation to ensure the transition goes as smoothly as possible for industry and for the staff of the inspectorate.



Kate du Preez

Commissioner for Mine Safety and Health

ABOUT THE COMMISSIONER



Kate du Preez is the Queensland Commissioner for Mine Safety and Health. The role of Commissioner is a public service officer appointed by the Governor in Council and employed under the Public Service Act 2008. She is the first independent Commissioner and the first woman to be appointed to the role.

Mrs du Preez has more than 20 years of experience in the mining industry across Africa and Australia, including working in underground coal mines and in management positions. She holds a Bachelor of Science in Mining Engineering and was the first woman in South Africa to hold a mine manager's certificate of competency in coal mining. As a miner herself, Mrs du Preez is passionate about the mining industry and is a strong advocate for mining safety and health issues.



Fatality involving an articulated dump truck

The operator of an articulated dump truck was fatally injured while working at a quarry in Central Queensland. The operator was moving the dump truck fully loaded down the access ramp, when it appears he lost control of the vehicle. At the bottom of the ramp the vehicle overturned, partially pinning the operator under the cab.

The incident is currently under investigation. However, the inspectorate issued a safety alert and made a number of preliminary recommendations, including that site senior executives must:

- ensure machines are operated with reference to original equipment manufacturer specifications
- include safety requirements as stipulated by the original equipment manufacturer with respect to the use and maintenance of safety critical items
- ensure that all equipment on site is suitably maintained and serviced in accordance with original equipment manufacturer requirements and site specific hazards—service and operational manuals for equipment must be available on site
- ensure all workers are competent to perform tasks on site and are competent on the particular equipment being operated—a record of the training must be maintained to show that workers possess the relevant competencies.



Fatality involving a quarry plant operator

A worker was fatally injured at a quarry in Central Queensland when he became entangled in the rotating tail drum of a conveyor belt. A co-worker activated the emergency stop device fitted to the conveyor.

This incident is currently under investigation. However, preliminary findings indicate that the tail drum guard had been removed to allow rocks to be cleared and the conveyor was operating with the guard removed when the incident occurred.

The inspectorate issued a safety alert and made a number of recommendations including to:

- always stop and isolate a conveyor before undertaking work on the conveyor
- never operate a conveyor without the necessary guarding in place
- always operate and maintain the conveyor in a way that eliminates or reduces the occurrence of spillage, requiring the need to remove guarding to clear it
- ensure that personnel operating or maintaining conveyors understand the hazards and risks and the critical controls necessary to prevent serious injury or death, such as separation through fixed guarding and isolation lock-out
- conduct regular inspections and monitoring to ensure that critical controls are in place and are effective.

Safety Reset

More than 52,000 mine and quarry workers participated in 1197 Safety Reset sessions in Queensland during July and August 2019. Participants included mine and quarry workers, senior mine and quarry management, union representatives and mines inspectors.



Grasree coal mine



Grosvenor coal mine



Grosvenor coal mine



Grosvenor coal mine



Moranbah North coal mine



Moranbah North coal mine



Tomato Island quarry



Dundowran quarry



Moy Pocket quarry



Beenleigh quarry



Beenleigh quarry

INDUSTRY OVERVIEW

All mines and quarries in Queensland are required to implement a safety and health management system⁴ that accounts for the risks involved in the operation of that mine or quarry. The system must also include strategies that mitigate those risks to a level that is both within acceptable limits and as low as reasonably achievable.

In most cases, these systems and processes are effective and protect the majority of workers from injury. However, there are still too many incidents where identified hazards with existing known critical controls are causing injuries or fatalities.

In 2018–19, the Queensland mining and quarrying industry endured a devastating year experiencing five fatalities, and a sixth in early July 2019. The industry also experienced a rise in the serious accident frequency rate which has risen from 0.59 serious accidents per million hours worked in 2014–15 to 1.02 in 2018–19. These statistics are unacceptable.

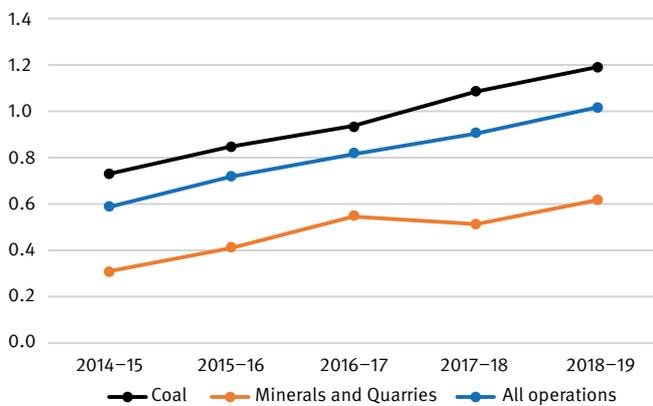


Figure 1: Serious accident frequency rate (serious accidents per million hours worked) 2014–15 to 2018–19

Under Queensland’s mining safety and health legislation, a *serious accident* is defined as an accident at a mine that causes the death of a person or for a person to be admitted to a hospital as an in patient for treatment for the injury. The serious accident frequency rate is one of a number of measures used to determine safety performance in the industry. However, due to the specific definition of serious

⁴ Section 39 (2) of the *Mining and Quarrying Safety and Health Act 1999* does not apply to an SSE of an opal or gem mine if no more than four workers are employed

accident, it can be seen as an accurate measure of safety performance and trends in the industry.

Another of the measures used to determine safety performance is lost time injuries. A *lost time injury* is defined as an injury resulting in that person being unable to work the next day or for a longer period, whether they are rostered to work or not.

The overall lost time injury frequency rate rose slightly to 3.3 injuries per million hours worked for 2018–19, up from 2.9 in 2017–18. However, the five-year rolling average for the lost time injury frequency rates shows a steady longer-term trend.

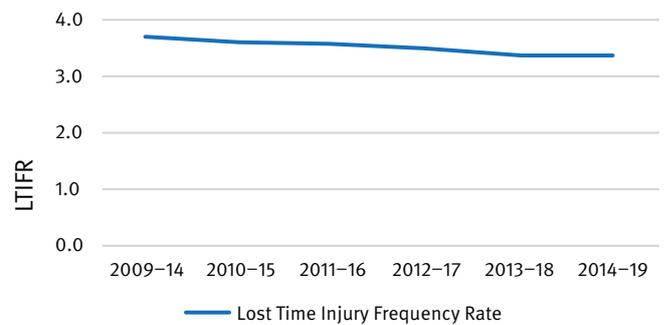


Figure 2: Lost time injury frequency rate for coal mines, five year rolling average

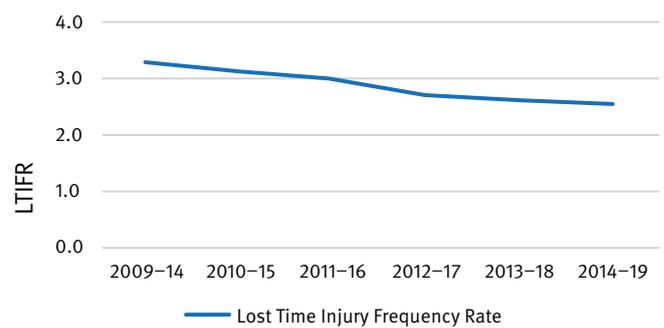


Figure 3: Lost time injury frequency rate for mineral mines and quarries, five year rolling average

The third key measure of safety performance is high potential incidents. A *high potential incident* is an event, or a series of events, that causes or has the potential to cause a significant adverse effect on the safety or health of a person.

High potential incidents are an important lead indicator and more than 85 per cent of high potential incidents over the last six years did not involve an injury to any worker. High potential incidents are an indicator of a mature reporting culture with strong regulatory oversight. The high potential incident frequency rate for 2018–19 fell slightly to 19.6 incidents per million hours worked, from 20.2 incidents per million hours worked in 2017–18.

By their nature, investigations into serious accidents and fatalities take time. As a result, it is too early to conclusively determine why there has been such an increase in fatalities and serious accidents in the last 12 months while the other main indicators remained steady. However, these incidents seem to indicate that many of these major incidents involved identified hazards with existing known critical controls and that, in many of the serious accidents, there appeared to be a

reliance on low-level controls and previous near misses and warnings were ignored.

As a result, serious questions have been asked of the industry regarding safety and health and its commitment to achieving zero harm. Questions have also been raised about the safety culture within the industry and the mining and quarrying workforce. The industry has responded positively to these questions and recently committed to a *Safety Reset* program which has seen more than 52,000 mine and quarry workers in Queensland stop work to attend safety and health-focussed sessions. These safety reset sessions are attended by workers, management and unions and are an opportunity for all stakeholders to discuss safety issues and concerns and to recommit to a positive safety culture. The safety reset program is a crucial first step in refocusing the industry's attention to what should be everyone's number one priority; the health and safety of workers.

Industry performance at a glance

ALL MINE TYPES

	2018–19	2017–18
Fatalities	5	1
Serious accidents	110	94
Serious accident frequency rate (per million hours worked)	1.02	0.91
Number of high potential incidents	2117	2092
High potential incident frequency rate (per million hours worked)	19.6	20.2
Number of lost time injuries	352	302
Lost time injury frequency rate (per million hours worked)	3.3	2.9

COAL MINES

MINERAL MINES AND QUARRIES

	2018–19	2017–18		2018–19	2017–18
Fatalities	3	1	Fatalities	2	0
Serious accidents	90	77	Serious accidents	20	17
Serious accident frequency rate (per million hours worked)	1.19	1.09	Serious accident frequency rate (per million hours worked)	0.62	0.52
Number of high potential incidents	1726	1711	Number of high potential incidents	391	381
High potential incident frequency rate	22.8	24.2	High potential incident frequency rate	12.2	11.6
Number of lost time injuries	279	234	Number of lost time injuries	73	68
Lost time injury frequency rate	3.7	3.3	Lost time injury frequency rate	2.3	2.1

PERFORMANCE OF THE QUEENSLAND MINES INSPECTORATE

The Queensland Mines Inspectorate is part of the Resources Safety and Health division in the Department of Natural Resources, Mines and Energy.

Mines inspectors are statutory officers appointed under the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*. Inspectors are responsible for:

- monitoring safety and health performance at mines
- taking action if unsafe practices or conditions are detected
- investigating incidents and complaints
- providing advice to the chief inspector regarding mine safety and health
- making recommendations to the Commissioner about prosecutions.

Inspectors have specific powers under the respective Acts to:

- enter workplaces and other places
- apply for, and execute, warrants
- seize or restrict access to evidence
- stop and secure plant and equipment
- obtain information.

The inspectorate employs two⁵ chief inspectors—Chief Inspector of Mines (Coal) and Chief Inspector of Mines (Mineral Mines and Quarries)—who have additional powers to give directives and to review and confirm, vary, or set aside directives given by inspectors, inspection officers, district workers' representatives, or industry safety and health representatives. The chief inspectors may delegate their powers to issue directives to an inspector who is appropriately qualified and experienced.

Mine inspections are completed on a structured and routine basis—both announced and unannounced—as well as in response to incidents, direct complaints, and if there is a perceived risk in particular sectors or on individual sites.

When inspectors consider that the safety and health risk is not being adequately managed, corrective action can be taken.

Compliance and enforcement

The inspectorate undertakes a variety of compliance activities, including inspections and investigations of complaints and incidents.

The inspectorate closely monitors industry to ensure sites operate safely and comply with legislation. Activities include inspections, audits, industry forums, site senior executive meetings and other industry engagement activities.

In instances of non-compliance, the inspectorate has a range of compliance tools that may be used:

- A substandard conditions or practice notice (low to medium risk) can be issued requesting that particular actions be taken within a specified timeframe to address an issue of non-compliance at a mine.
- A directive (unacceptable level of risk) may be issued, which is a statutory, enforceable requirement to a mine to take particular action within a specified timeframe. Directives remain in force at the operation they were issued to, unless withdrawn in writing.
- An accountability meeting can be held by a chief inspector or other senior inspector with either the site management or senior company management of the relevant mine. Accountability meetings are held to discuss with mine representatives their obligations and to enable them to demonstrate how they discharge their obligations in a way that achieves an acceptable level of risk.
- Prosecution can be used if the public interest requires a punitive response to non-compliance and it is in the public interest to do so.

The regulator determines the most appropriate course of action on a case-by-case basis.

⁵ In 2018–19, the two chief inspector positions were combined into a single chief inspector.

In making decisions, the inspectorate considers a number of factors as outlined in Figure 4.

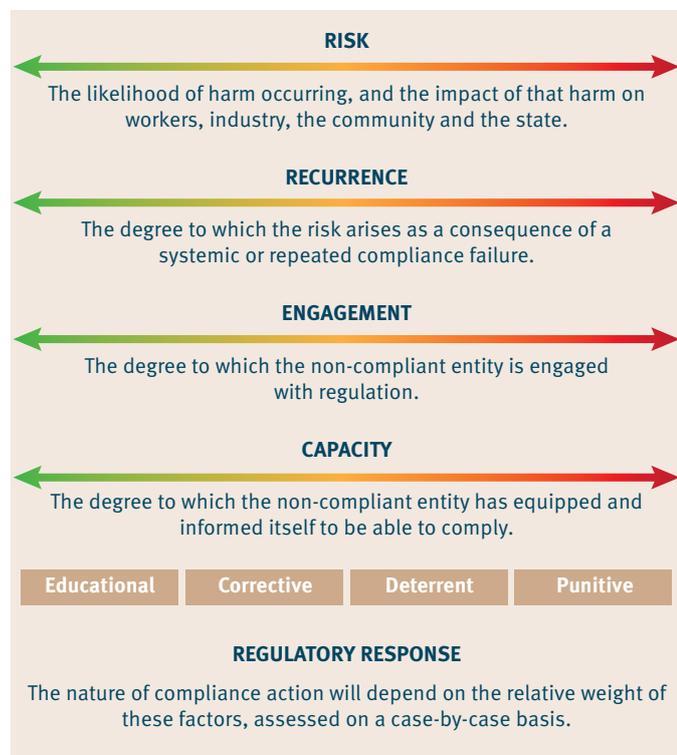


Figure 4: Factors considered when making a decision regarding regulatory action⁶

In all cases of compliance, the inspector will make an entry on the mine record of the issue and action to be taken by the mine.

Compliance program in 2018–19

The inspectorate's compliance program varies over time, dependent upon industry safety performance and inspectorate priorities.

It is important to note that while the regulator sets annual targets for proactive activities such as inspections and audits, and makes assumptions about the number of complaints and incidents to be investigated, it must remain flexible to changes in industry performance which may necessitate a change in the mix of regulatory activity. An example of this is the requirement to prioritise the investigation of fatalities and serious accidents over routine inspections and other activities.

In 2018–19, the inspectorate conducted 1327 mine inspections, 67 audits and 123 investigations, and received 104 complaints. The inspectorate also issued 1139 substandard conditions or practice notices, 435 directives, 9 safety alerts and 9 safety bulletins, and held 6 compliance meetings (tables 1-8).

In recent times, the inspectorate has deliberately increased its use of mine site audits—an increase of 28 per cent over the past three years. These audits involve teams of inspectors who typically spend around a week at a mine site compared to regular mine inspections which are typically performed by one inspector over one or two days. Audits provide a more in-depth analysis of an operation's safety and health performance and provide more valuable feedback to the mine regarding improvements that can be made. The number of in-depth investigations conducted by the inspectorate has also increased significantly—an increase of 30 per cent over the past three years.

This indicates that the regulatory effort by the inspectorate has not changed, rather the regulatory approach has changed in response to industry performance and identified focus areas.

⁶ Department of Natural Resources, Mines and Energy Resources Safety and Health Compliance Policy, September 2018

Mine inspections

Table 1: Mine inspections conducted in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	365	390	411
Mineral mines and quarries	962	986	1048
TOTAL	1327	1376	1459

Mine audits

Table 2: Mine audits conducted in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	60	42	10
Mineral mines and quarries	7	23	42
TOTAL	67	65	52

Investigations

Table 3: Investigations conducted in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	74	45	41
Mineral mines and quarries	49	41	53
TOTAL	123	86	94

Complaints received

Table 4: Complaints received in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	52	54	43
Mineral mines and quarries	50	49	57
Other—no mine involved	2	4	0
TOTAL	104	107	100

Substandard conditions or practice notices

Table 5: Substandard conditions or practice notices issued in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	303	241	278
Mineral mines and quarries	836	623	810
TOTAL	1139	864	1088

Directives

Table 6: Directives issued in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	144	147	130
Mineral mines and quarries	291	303	327
TOTAL	435	450	457

Compliance action

Table 7: Compliance action in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	1	26	10
Mineral mines and quarries	5	3	9
TOTAL	6	29	19

Suspended operations

Table 8: Number of operations suspended in 2018–19 (compared to 2016–17 and 2017–18)

	2018–19	2017–18	2016–17
Coal mines	14	25	12
Mineral mines and quarries	48	67	63
TOTAL	62	92	75

Safety alerts

In 2018–19, the inspectorate issued 9 safety alerts on a range of issues. This is compared to 11 in 2017–18 and 15 in 2016–17.

Safety alerts are short reports that provide an examination of safety and health incidents at mines in relation to specific incidents. They are issued to all mines and are published on the department's website. Alerts provide recommendations for mines to help reduce recurrence of incidents.

Safety bulletins

In 2018–19, the inspectorate issued 9 safety bulletins on a range of issues. This is compared to 9 in 2017–18 and 9 in 2016–17.

Safety bulletins are short reports that provide general advice on safety and health best practice at mines in relation to specific topics. They are issued to all mines and published on the department's website.

Announced and unannounced inspections

The Coal Workers' Pneumoconiosis Select Committee recommended that the inspectorate increase its proportion of unannounced inspections to more than 50 per cent.

In considering the level of announced versus unannounced inspections, it is valuable to consider the purpose and effectiveness of both types of inspections. Announced inspections are a necessary practice for a regulator to ensure the effectiveness and efficiency of the risk is managed considering direct observation, variety of evidence and discussions. However, unannounced inspections are an essential aspect of a regulator's approach and a reasonable proportion of inspections should be carried out unannounced, including visits at weekends and out of normal working hours.

In the case of major hazards, announced inspections are more effective than unannounced inspections as many risk controls cannot be directly observed by inspectors without prior arrangement. Typically, their efficacy must be inferred through the examination of mine plans and the systems and procedures put in place to manage these hazards, and from discussions with those who developed and are

responsible for implementing the plans in practice. Even when a mine site is advised in advance of a visit, there are only a limited range of matters of importance which can be changed in the relatively short time between announcing an inspection and carrying it out. For example, a ventilation system cannot suddenly be improved because an inspector makes an announcement about a visit, and sudden changes made to workplace arrangements and conditions are readily detectable by inspectors.

While there is no simple method of determining the appropriate level of unannounced inspections, evidence from other high hazard industries suggests a level of approximately 10–20 per cent.

In 2018–19, the inspectorate conducted 19 per cent of coal mine inspections and 17 per cent of mineral mine and quarry inspections unannounced.

Incident investigation reports

The inspectorate recognises the importance of sharing information with industry, workers and the public in regards to investigations into mining safety and health incidents. Reports about investigations into safety and health incidents in Queensland's coal mines and mineral mines and quarries are published where it is in the public interest to do so.

Publishing investigation reports can help raise awareness about risks that may affect the safety and health of workers, promote good safety and health practices, and deter practices and behaviours that endanger the safety and health of workers.

The inspectorate published two incident investigation reports in 2018–19:

- Report into a fatality at Goonyella Riverside Mine on 5 August 2017
- Report into a winder brake failure at Osborne Mine on 1 March 2015.

Prosecutions

Prosecutions may be undertaken in response to instances of non-compliance where it is in the public interest to prosecute and there is sufficient evidence as to be capable of securing a conviction. For example, prosecution may be considered appropriate where the alleged offender shows significant resistance to, or disengagement with, its safety and health obligations.

In 2018–19, there were six prosecutions before the courts involving 13 defendants. Three of these prosecutions were finalised during this period, although two of these finalised prosecutions are now subject to appeals before the Industrial Court. As at the end of 2018–19, three prosecutions remained on foot, involving seven defendants. Two of these prosecutions were commenced during the period, involving three defendants.

Examples of the prosecutions, including two cases relating to fatalities, are outlined below.

Fatality at a quarry in Central Queensland in 2012

On 5 June 2012, an incident occurred at a quarry in Central Queensland in which a quarry worker was fatally injured when he was pulled into an operating conveyor on a fixed crushing plant.

Seven defendants were charged with offences against the *Mining and Quarrying Safety and Health Act 1999*. Pleas of guilty were entered by a number of the defendants and they were sentenced in 2016. Three of the defendants pleaded not guilty and the matters proceeded to trial with each being found guilty. The company director was sentenced to 18 months imprisonment to serve six months, the operator was fined \$400,000 and the site senior executive was fined \$35,000. This is the first time that a custodial sentence has been handed down for a prosecution under the *Mining and Quarrying Safety and Health Act 1999* or the *Coal Mining Safety and Health Act 1999*.

The company director appealed against his conviction and sentence and these decisions are currently reserved by the Industrial Court.

Fatality at a quarry in Central Queensland in 2018

On 29 July 2018, an incident occurred at a quarry located in Central Queensland in which a quarry worker was fatally injured when an articulated truck that he was driving overturned, pinning him under the truck's cabin.

Two defendants were charged with offences against the *Mining and Quarrying Safety and Health Act 1999* arising from the incident and both prosecutions are on-going.

Serious incident at a mineral mine in North Queensland in 2016

On 23 February 2016, a worker sustained significant injuries at a mineral mine located in North Queensland when a fire suppression cylinder that he was attempting to secure to a handrail unexpectedly discharged.

Four defendants were charged with offences against the *Mining and Quarrying Safety and Health Act 1999* arising from the incident. Each of the prosecutions are on-going.

CASE STUDY

Mine explosion risk zone controller trapped by an airlock door

A mine explosion risk zone controller sustained permanent disabling injuries at a Central Queensland underground coal mine after his leg was trapped in an airlock door for more than five hours. While accessing a return airway to conduct bag sampling, the explosion risk zone controller became trapped at a portal airlock entrance.

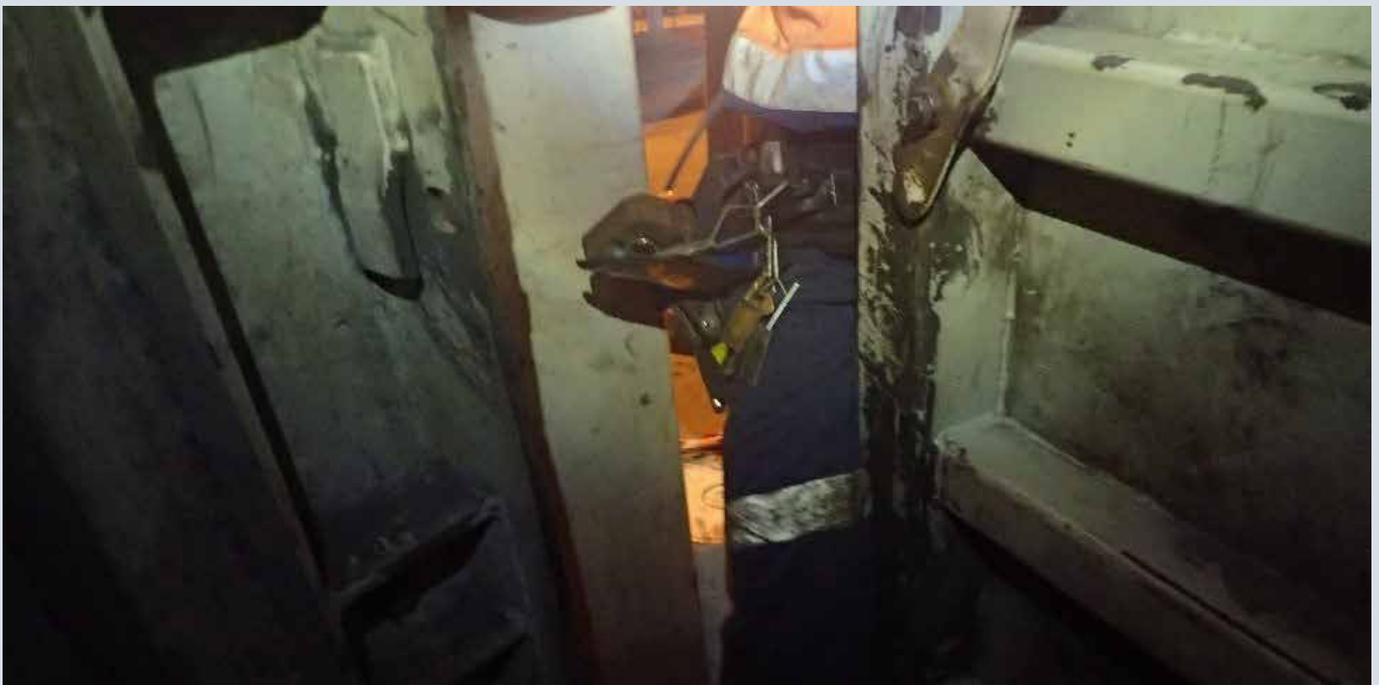
The inspectorate found that, of the five portal airlock entrances at the site, three were of different designs and the mine had no established standard for airlock design at the time of the incident.

While the site did have a current *Working alone in isolated areas* procedure, it was not applied by either the explosion risk zone controller or the control room officer for the task on this day. Mine statutory officials also had a poor

understanding of the working alone procedure and some workers had not received working alone procedure training. In addition, an audit by a senior management team member which took place 66 days prior to the incident found deficiencies in applying the working alone procedure. Actions raised in this audit were not implemented.

The inspectorate also found that the design of the airlock was fundamentally incorrect for the purpose of providing safe access and that high pressure differential risk at airlocks was identified in planning meetings up to seven years prior to the serious accident occurring. There was no record or evidence of this being actioned. There was also no evidence that change management processes were applied when the airlock design was modified; nor was there evidence of a risk assessment being conducted for the original airlock design.

The inspectorate issued a safety bulletin and made 10 recommendations.



Coal mines

During 2018–2019, the inspectorate’s primary focus in relation to coal mines was on its program of scheduled inspections and audits in relation to identified hazards and responding to serious incidents and complaints. Specific focus areas included the management of methane gas in underground mines, the control of respirable coal dust and respirable crystalline silica, and on lifting and slinging activities and vehicle incidents.

Table 9: Performance against KPIs for coal mines

TARGET	OUTCOME
Undertake 396 coal mines inspections	The inspectorate undertook 365 coal mine inspections.
Undertake 65 coal mine safety and health management system audits	The inspectorate undertook 60 coal mine audits.
Continue to monitor dust exposure levels and publish data online	Coal mine dust monitoring results published and reported to Coal Mining Safety and Health Advisory Committee each quarter.
Hold underground mine managers forum	Forum was held in Moranbah on 18 July 2018.
Deliver Queensland mining fatality review	Review was expanded by the Minister and will be delivered in early 2020.
Publish recognised standards:	
<ul style="list-style-type: none"> Design and construction of mine roads 	Gazetted 9 August 2019
<ul style="list-style-type: none"> Dust control for surface mines 	Draft recognised standard has been distributed to stakeholders for feedback.
<ul style="list-style-type: none"> Hazardous chemicals 	Gazetted 19 July 2019
<ul style="list-style-type: none"> Management of heat in underground coal mines 	Gazetted 9 August 2019
<ul style="list-style-type: none"> Management structures 	A tri-partite sub-committee has been established and drafting of the recognised standard has commenced.
<ul style="list-style-type: none"> Risk management 	A tri-partite sub-committee has been established and drafting of the recognised standard has commenced.
<ul style="list-style-type: none"> The use and control of polymeric chemicals at underground coal mines 	Gazetted 31 May 2019
Review recognised standards:	
<ul style="list-style-type: none"> Explosion protection of diesel engines 	Referred to Coal Mining Safety and Health Advisory Committee for endorsement 5 September 2018

Inspectors undertook investigations into three coal mining fatalities, and a serious spontaneous combustion event. The demands of investigating these serious incidents led to a re-prioritisation of compliance activity and reduced the planned number of inspections and audits.

The compliance program for coal mines concentrated on major audits of the controls, systems and processes at mine sites to effectively manage ventilation systems, respirable coal dust and respirable crystalline silica controls, and diesel particulate matter.

During the year, the inspectorate conducted 365 inspections and 60 audits of coal mines compared with 390 inspections and 42 audits in 2017–18. Of the 365 inspections, 19 per cent were unannounced. Audits focused primarily on selected principal hazards and the implementation of recognised standards and included 16 focussed on fixed and mobile mechanical plant, 12 on underground mine gas and ventilation management, 8 on dust monitoring, and 3 on management of tyres, wheels and rims.

In 2018–19, the inspectorate initiated 74 investigations, of which 24 were the result of complaints, 3 from fatalities, 16 from high potential incidents, 14 from serious accidents and 12 from issues raised by site safety and health representatives/industry safety and health representatives.

Gas management at underground coal mines

As Queensland's underground coal mines become deeper and longwall production rates increase, coal mines must be more vigilant in controlling the concentration of methane in underground areas of the mine. Under the *Coal Mining Safety and Health Act 1999* and the *Coal Mining Safety and Health Regulation 2017*, workers must be withdrawn from the mine when methane concentration is equal to or greater than 2.5 per cent.

Beginning in 2017–18 and finishing in early 2018–19, the inspectorate conducted a series of compliance audits and requested gas monitoring data from all longwall coal mines in Queensland. The inspectorate used the data collected to conduct a detailed analysis of methane management.

The analysis revealed that while the gas monitoring systems at all mines complied with the *Coal Mining Safety and Health Act 1999*, some mines were not compliant with the gas monitoring regulations. For example, some mines were not reporting all incidents of methane concentration of more than 2.5 per cent and some did not have adequate monitoring of methane levels in close proximity to the longwall face in the

longwall tailgate return airway. Modelling of ventilation and methane emissions showed that in some cases explosive mixtures of methane could have been present in the atmosphere flowing into the longwall tailgate.

In 2018–19, the inspectorate took compliance action against those mines found to be non-compliant and issued a number of directives and substandard conditions and practice notices and corrective action was taken by those mines.

In June 2019, the inspectorate published the *Methane management in underground coal mines best practice and recommendations* guide which provided advice and recommendations for all underground coal mines in how to monitor and manage methane concentration levels. The guide also aimed to ensure that all mines understood the methane gas monitoring regulations and the expectations of the inspectorate.

In addition, the inspectorate developed proposed amendments to the legislation to clarify and confirm minimum methane monitoring requirements at all relevant locations in an underground mine. These amendments are expected to be progressed in 2019–20.

The safe management of flammable gases within surface coal mines and associated exploration areas has been identified by the coal mines inspectorate as a critical focus area.

Underground spontaneous combustion event

On 1 September 2018, the operator of North Goonyella coal mine made a safety-based decision to remove all personnel from the underground mine following a methane concentration of greater than 2.5 per cent.

In the hours that followed, the mine's spontaneous combustion triggers were reached, escalating the level of risk. Efforts to control the spontaneous combustion occurring underground continued during September. Continued evidence of escalating spontaneous combustion resulted in the sealing of the mine in late September/early October.

The inspectorate was actively involved in monitoring site activities and working with North Goonyella mine personnel to ensure the level of risk to workers was at an acceptable level. This extended to having inspectors onsite from when the spontaneous combustion event was first reported.

The inspectorate started gathering relevant information in November 2018 and formally commenced an investigation

in January 2019 after the site was stabilised. The purpose of the investigation was to analyse events leading up to the incident, with a focus on any events that could have created an unacceptable level of risk to coal mine workers.

The first three months of the investigation involved gathering mine documents and requesting further data where gaps were identified. As part of its investigation, the inspectorate has reviewed more than 11,300 files, including ventilation records, gas data and the mine's safety and health management system.

Persons of interest to the investigation have exercised their right under the *Coal Mining Safety and Health Act 1999* not to be interviewed by the inspectorate unless compelled by law to do so. As such, no interviews were conducted in 2018–19 in relation to the incident.

The preliminary observations from the investigation were published on 9 August 2019. Although the inspectorate's investigation is ongoing, the following preliminary observations may be relevant to the nature and cause of the incident:

- A review of the mine's records suggest that gas trends were not given sufficient consideration. This may have impacted the way in which relevant *trigger* action response plans were applied and actioned.
- Some key reports relating to the mine's ventilation plan, gas alarm system and explosion risk zone controls do not appear to have been reviewed or countersigned by key personnel, as required under the mine's safety and health management system.
- There is evidence that some boreholes located deep within the 9N goaf region were insufficiently sealed, allowing ingress of oxygen into active goaves, with the potential to escalate conditions for spontaneous combustion.
- There is evidence to suggest that the gas drainage system was being operated to focus on management of methane instead of the potential spontaneous heating event that was occurring underground.
- There is evidence to suggest the mine did not follow its own procedures relating to major ventilation changes.

It is important to note that these are preliminary observations and not conclusive findings. As the inspectorate's investigation continues, these observations will be reviewed and formal findings and recommendations will be published.

In addition to investigating the incident, inspectors have been involved in reviewing the operator's risk management activities ahead of any planned attempts at mine re-entry. On 28 June 2019, the inspectorate granted the underground mine manager consent to re-enter the mine after it had been shown that an acceptable level of risk had been achieved and documented in the mine-re-entry management plan. The inspectorate will continue to be involved to ensure risk is appropriately managed.



Figure 5: The Simtars GAG engine was deployed as part of the response to the spontaneous combustion event at North Goonyella

Lifting and slinging and vehicle incidents

In 2018–19, the inspectorate noted an increase in the incidences of non-compliant lifting equipment and poor lifting practices at coal mines. A subsequent review of incident data highlighted a rise in serious accidents related to cranes, lifting and slinging.

The inspectorate raised concerns relating to lifting at industry briefings, including the annual industry leaders' forum and forums for mechanical engineers. In addition, two safety bulletins were published which advised industry about issues related to lifting and the use of cranes and lifting equipment.

In 2018–19, there were a number of serious incidents involving vehicles, including three fatalities.

The inspectorate issued a number of safety alerts and bulletins including issuing recommendations about maintenance of mobile plant braking systems, suitability of training for operators of mobile plant, fatigue management practices, edge protection to prevent equipment from falling, and ensuring equipment is suitably maintained and

serviced in accordance with original equipment manufacturer requirements and site specific hazards.

Review of fatalities at coal mines

In addition to its ongoing compliance program of inspections and audits of mines and quarries, the inspectorate commissioned an independent review of coal mining fatalities.

The review was originally planned to examine the findings of investigations into the nature and cause of fatalities from 2000–2018, but was expanded to include all fatalities up to the most recent fatality in July 2019 and all mineral mines and quarries fatalities from the same period.

The review aims to identify areas where the industry can improve and the regulator can be most effective.

The independent review commenced in late 2018 and is due to be completed in early 2020.

Diesel particulate in underground coal mines

In 2018–19, the inspectorate continued collecting and incorporating diesel particulate matter exposure data from all underground coal mines into the online dust database. The database holds a comprehensive record of more than 8500 personal exposure samples for the calendar years from 2002 to 2018—including 1249 samples from 2018.

Data from 2018 shows there was continued improvements in average diesel particulate matter concentrations across the most at-risk similar exposure groups, with the exception of the *development* similar exposure group, where 50 per cent of sites saw an increase in mean exposures. However, only one site exceeded the occupational exposure limit.

There were a total of 50 exceedances recorded across all similar exposure groups in 2018 resulting in a total single exceedance rate of four per cent. The *longwall move* similar exposure group accounted for 34 per cent of all single exceedances recorded, followed by *development* (32 per cent) and *production support/bullgang* (10 per cent). There were no exceedances recorded in the *underground maintenance* similar exposure group in 2018.

The inspectorate expects all underground coal mines to have a diesel emissions management plan which forms part of the mine's safety and health management system. The plan is required to involve relevant disciplines such as engineering, mine design and ventilation, hygienist, training and supervision.

In February 2019, the inspectorate published a *Diesel emissions management in underground coal mines best practices and recommendations guide* to assist mines with developing an effective plan to manage diesel emissions.

The guide details current trends in diesel particulate matter, outlines the requirements of diesel emissions management plans, discusses the findings of the inspectorate's recent structured inspection program focussing on diesel emissions, and provides recommendations on best practices in managing diesel emissions in underground coal mines.

Inhalable dust reforms

As the knowledge and understanding of mine dust lung disease advances, it is becoming more apparent that the hazards related to dust are broad and complex.

Inhalable dust is made up of all of the types of dust that can be deposited throughout the entire respiratory system. This distinguishes it from respirable dust, which is made up of particles that are so small they can make their way to the gas exchange region of the lungs. While most of the attention has been focussed on respirable dust, it is believed inhalable dust may be a contributing factor to the development of chronic obstructive pulmonary disease as it causes inflammation in the respiratory tract.

In 2018–19, the inspectorate expanded the airborne contaminants database to include personal inhalable dust results for coal mines. The inspectorate requested all operating coal mines to provide historic inhalable dust data. Almost 8000 samples were provided dating back to 2005. This has enabled the inspectorate to assess historic inhalable dust exposure.

Analysis of the inhalable dust data for Queensland coal mines shows that, while respirable coal dust exceedance rates are decreasing, inhalable dust exceedance rates remain high. The average inhalable dust exposure levels for the development and longwall similar exposure groups routinely exceeded or approached the recommended limit of 10 mg/m³. It has also been identified that respirable dust concentration is not a reliable indicator of the inhalable dust concentration present.

The inspectorate has recommended that Queensland coal mines consider inhalable dust in their health risk assessments; undertake baseline monitoring to assess risk, effectiveness of control and future monitoring requirements; and to adopt an interim guideline value of 10 mg/m³ with a shift adjusted action limit of 5 mg/m³.

The inspectorate will continue to address inhalable dust risk in 2019–20.

Mineral mines and quarries

In 2018–19, the inspectorate's primary focus in relation to mineral mines and quarries was on collisions, entanglement, falls, respirable dust and uncontrolled release of pressure.

Table 10: Performance against KPIs for mineral mins and quarryys

TARGET	OUTCOME
Undertake 784 mineral mines and quarries inspections	The inspectorate undertook 972 mineral mine and quarry inspections.
Undertake 4 mine safety and health management system audits	The inspectorate undertook 7 mineral mine and quarry audits.
Collect 100 respirable crystalline silica samples and conduct 30 structured inspections of mineral mines and quarries for respirable crystalline silica management	The inspectorate collected 131 respirable crystalline silica samples. The inspectorate undertook 48 respirable crystalline silica inspections.
Mineral mines and quarries respirable crystalline silica dust data results captured and ready for publication.	Data is captured and has been published in industry forums.
Arrange and conduct annual Quarrying Safety and Health Seminar in conjunction with the Institute of Quarrying Australia and Cement Concrete and Aggregates Australia.	Seminar held on 14 June 2019.
Arrange and conduct small mines and quarry seminars in Townsville and Rockhampton in conjunction with the Institute of Quarrying Australia.	Seminars held in Townsville and Rockhampton.
Conduct Mining Electrical Safety Conference	Conference held from 3–5 June 2019.
Hold 1 underground mine managers' forum	Forum held on 16 May 2019.
Meet at least once with: <ul style="list-style-type: none"> North Queensland Miners Association Winton Boulder Opal Association Queensland Sapphire Miners Association Yowah Opal Mining Community Queensland Exploration Council. 	The inspectorate met once with the North Queensland Miners Association, Queensland Sapphire Miners Association, Yowah Opal Mining Community, and Queensland Exploration Council. The inspectorate met twice with the Winton Boulder Opal Association.
Publish guidance material: <ul style="list-style-type: none"> Hazardous chemicals guidelines Tyre, wheel and rim guidance note Opal and gem miners' pocket book. 	Gazetted 19 July 2019. Published 27 September 2018 Draft handbook completed. Awaiting feedback from stakeholders.
Publish Winder brake failure at Osborne Mine investigation report	Published 9 November 2018.

Inspectors undertook investigations into two quarrying fatalities which occupied a significant number of inspectorate resources. Despite this, the inspectorate was able to achieve all of its performance targets for the year except one which was held up by external factors. The inspectorate continued its engagement campaign to educate the industry about reportable incidents. As a result, the number of incidents reported has increased in 2018–19.

During the year, the inspectorate conducted 962 inspections and 7 audits of mineral mines and quarries compared with 986 inspections and 23 audits in 2017–18. Of the 962 inspections, 17 per cent were unannounced.

The inspectorate generally inspects and audits systems to ensure they are effective, and that suitable controls are implemented in the workplace. In 2018–19, as part of its regular inspection program, the inspectorate focussed its attention on the types of controls being implemented at mineral mines and quarries to ensure they were effective for managing hazards and risks in the workplace.

Inspectors focussed on risk management processes to ensure specific controls have been identified, implemented and monitored. This included challenging controls such as procedures, training, and toolbox talks to ensure the specific effective controls contained within those processes have been identified, implemented and monitored.

Campaign for Change

Many incidents in mineral mines and quarries are a result of controls to manage known risks—which have the potential to cause fatalities and serious accidents—not being effectively implemented.

In March 2019, the inspectorate implemented a major inspection and education campaign which targeted three key areas for action in order to improve the controls which manage these identified risks. The *Campaign for Change* focussed on guarding, mobile equipment and isolation and aimed to ensure industry has a clear understanding that it is unacceptable to:

- operate plant without effective guarding in place
- use mobile equipment that is not maintained and inspected in accordance with original equipment manufacturer requirements
- allow workers to operate mobile equipment without being appropriately trained and competent
- conduct work on plant that is not correctly isolated and locked out.

The campaign was communicated to mine and quarry sites by regional mines inspectors in March 2019 and further information was communicated to site senior executives by the Chief Inspector of Mines in May 2019. The campaign message has been reinforced at a number of mining and quarrying industry conferences, seminars and forums across the state.

In 2018–19, the inspectorate conducted a significant number of targeted Campaign for Change inspections, resulting in 41 directives being issued to suspend operations. The campaign will continue into 2019–20 and will include an assessment of its impact on safety and health in the industry.



Management of respirable crystalline silica

The inspectorate continued to ensure the effective management of respirable crystalline silica in Queensland mineral mines and quarries by refining and updating the *Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries*.

A refined version of the guideline was published in May 2018 to enable the inspectorate to include dust monitoring data from around 1800 mineral mines and quarries in the respirable dust database. The inspectorate developed an electronic information portal to allow mine and quarry operators to submit dust monitoring results. From 1 July 2018, mineral mines and quarries have been required to submit all respirable crystalline silica exposure monitoring results to the inspectorate for inclusion in the database. This data is being used to monitor industry performance.

A structured inspection guide was developed and used to assess the management of respirable crystalline silica, including monitoring and health surveillance at higher risk sites. In 2018–19, there was a significant increase in the number of sites addressing the risk of respirable dust as required by the guideline with more than 50 per cent of sites becoming compliant with the new requirements during the year. In all, 76 per cent of sites are now compliant with the guideline.

In March 2019, the inspectorate commenced a further review of the guideline to explore how recommendations from the Monash University Centre for Occupational and Environmental Health review⁷ which are applicable to mineral mines and quarries could be incorporated into the guideline.

Areas being considered by the review include:

- expanding the scope of the guideline to include respirable dust
- excluding lower-risk operations such as opal, gemstone, alluvial gold and tourist mines
- clarifying the requirements for assessing and measuring risk
- enhancing and modifying the health surveillance standards to closely align with the testing standards and quality control processes established for the Coal Mine Workers' Health Scheme
- including performance standards and verification activities for dust control measures
- updating the exposure limit for respirable crystalline silica based on any changes published by Safe Work Australia.



Figure 6: Percentage of operational mines achieving compliance to QGLO2 per year

⁷ Review of Respiratory Component of the Coal Workers' Health Scheme for the Queensland Department of Natural Resources and Mines – Final Report – 12 July 2016 – Monash Centre for Occupational and Environmental Health, Monash University

The inspectorate has consulted closely with industry stakeholders, the Mining Safety and Health Advisory Committee, occupational hygiene specialists within the inspectorate, and the department's Occupational Health and Hygiene Unit about the changes being considered. Any changes made to the guideline will be presented to the Mining Safety and Health Advisory Committee for endorsement before being approved and gazetted by the Minister.

The review is expected to be completed in 2019–20.

Monitoring respirable crystalline silica in small mines and quarries

On 1 July 2018, the inspectorate commenced a two-year program to conduct dust sampling in small to medium mineral mines and quarries and to assess compliance with the *Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries*.

The program was conducted in operations such as hard-rock quarries, sand mines, gemfield mines, and operations producing sandstone, bentonite, diatomaceous earth and lime. It included the collection of dust samples by a mines inspector and a structured inspection program to monitor compliance with the guideline.

In 2018–19, the inspectorate collected more than 250 personal samples and 18 static-position samples from 66 sites. Sample results closely reflected those of larger mineral mining and quarrying operations and indicate that most workers in smaller operations are not exposed to dangerous levels of respirable crystalline silica.

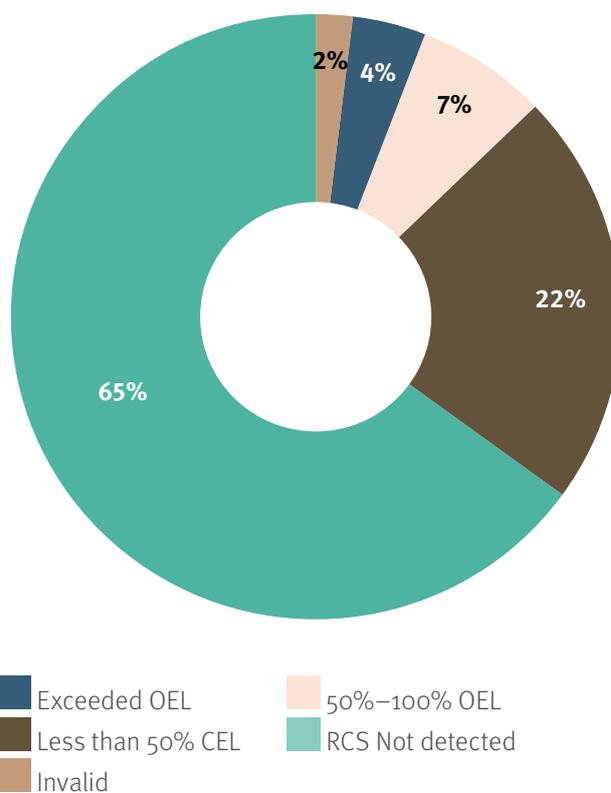


Figure 7: Respirable crystalline silica sample results from small mines and quarries

However, the program showed that many operators of small to medium mineral mines and quarries:

- do not appear to clearly understand the guideline
- are often not thoroughly evaluating the risk from respirable crystalline silica
- often fail to ensure that the control measures that are in place remain effective.

As a result, 140 compliance actions have been issued, with the majority requiring the operation to evaluate and control their respirable crystalline silica risk and to engage an occupational hygienist to develop and undertake an exposure monitoring program.

The inspectorate will use the preliminary results of the program to review the guideline to ensure that the unique challenges faced by small to medium mineral mines and quarries are recognised. The inspectorate will also seek to expand education and engagement opportunities for operators to bring about permanent positive improvements in respirable dust exposure for workers.

Diesel particulate in underground mineral mines

In 2017–18, the inspectorate worked with underground coal mines to proactively address the challenges associated with exposure to diesel particulate matter. This program was expanded to underground mineral mines in 2018–19.

While there is no nationally accepted occupational exposure limit for diesel particulate matter, the inspectorate has adopted a limit of 0.1 mg/m³ as recommended by the Australian Institute of Occupational Hygienists. This adopted occupational exposure limit was published in January 2014 in QGN21 *Guidance note for management of diesel engine exhaust in metalliferous mines* and has been adopted across the industry.

As part of the program, the inspectorate collected available personal diesel particulate matter exposure data from all underground mineral mines from 2014–15 to 2018–19. From January to March 2019, the inspectorate also undertook a targeted inspection program in underground mineral mines to explore the control measures used at each site and the resultant exposure to diesel exhaust for underground similar exposure groups. Similar exposure groups included plant operators in enclosed cabs, workers on fixed plant, and pedestrian workers.

The targeted inspection program found that there has been varied implementation of engineering control measures across different mines including:

- mine ventilation proportional to the mine fleet
- gaseous emission testing, a small number of mines have also been undertaking diesel particulate emission testing
- installation of diesel particulate filters
- powered air purifying respirator for high exposure activities.

Analysis of the data showed that, although different control measures have been used across sites, underground mineral mines have generally operated within the adopted occupational exposure limit, with some mines occasionally recording mean exposure results which exceeded prescribed limits. Around 94 per cent of workers have exposure levels below 50 per cent of the occupational exposure limit, with around 4 per cent recording exposure between 50 to 100 per cent. Only around 1.4 per cent of workers have exposure levels above the occupational exposure limit.

Analysis of the exposure profiles show that the majority of exceedances of the occupational exposure limit come from the following similar exposure groups:

- drilling, including jumbo
- shotcreting operations
- service crew
- charge-up crew.

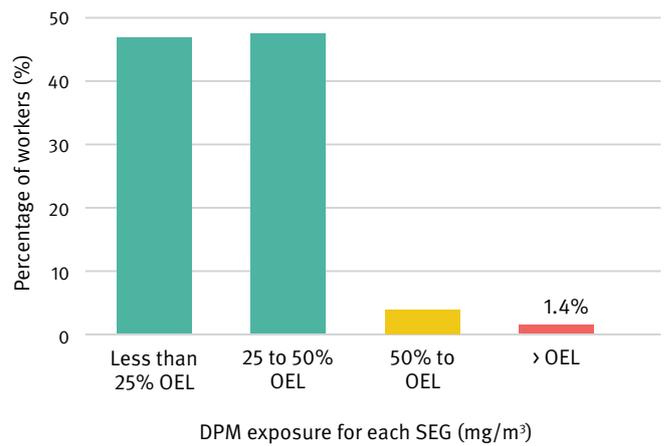


Figure 8: Exposure rates to diesel particulate matter for similar exposure groups in underground mineral mines

Analysis shows that underground mines have systems and processes in place to limit exposure to diesel particulate matter to well below the occupational exposure limit. While it is important that the current systems are maintained, the inspectorate will be working with individual mines to provide feedback on the exposure profile of workers and to promote further improvements. The inspectorate will also work with individual sites to ensure each exceedance is investigated and the specific factors that cause the exceedance are identified and addressed.

Irrespirable atmosphere in a mine or quarry

An atmosphere is considered to be irrespirable under conditions where there is an immediate threat to life or the potential for adverse health effects. The potential for the atmosphere in a mine or quarry to become irrespirable due to airborne contaminants, the loss of a fresh air supply, or other causes is well recognised in the industry.

In March 2019, the inspectorate released a report analysing the incidents where workers in mineral mines and quarries

were exposed to an irrespirable atmosphere. Since 2004, there have been 24 incidents related to irrespirable atmosphere in the Queensland mining and quarrying industry including three serious accidents and one workplace fatality.

The report analyses several occurrences and provides a summary of the incidents, contributing factors, outcomes and corrective actions. It aims to raise industry awareness of the hazards of irrespirable atmosphere in mineral mines and quarries and makes a number of recommendations related to risk management.

Small miners' handbook

In 2018–19, the inspectorate commenced the development of a handbook for operators of small mines to assist opal and gem stone miners to effectively manage the health and safety hazards and risks at their operations.

The initial development focused on the key hazards and risks prevalent in small mines. After the development of the initial draft, the inspectorate engaged with relevant industry groups including the Yowah Opal Mining Community, the Queensland Sapphire Miners Association and the Winton Boulder Opal Association to further develop the handbook.

Feedback from these industry groups and a number of individual small miners is now being incorporated into the final draft of the small miners handbook. It is expected the handbook will be published in 2019–20.

Memorandum of understanding on occupational lead exposures with the Department of Health

In October 2018, the Department of Health agreed to share information about workplace lead exposures with the Department of Natural Resources, Mines and Energy. Under the agreement, information on occupational lead exposures notified to the Department of Health through the notifiable conditions register will be provided to the Department of Natural Resources, Mines and Energy.

This information will assist in reducing workplace injury and disease by improving the identification and management of lead exposure risks at mineral mines and enable the inspectorate to develop targeted strategies to improve mine worker health.

Biological monitoring for lead is conducted by taking a blood sample and measuring the blood lead level. Biological monitoring starts before the worker commences the work and one month after starting and must continue at regular intervals depending on previous results, gender and reproductive capacity.

Resources Safety and Health performance accountability framework

The Resources Safety and Health Performance Accountability Framework was established to assess the performance of the mines, petroleum and gas, and explosives inspectorates when carrying out their functions.

The framework was modelled on the Australian Government Regulator Performance Framework and consists of six outcomes-based key performance indicators covering:

1. reducing the regulatory burden
2. communication
3. risk-based and proportionate approaches
4. efficient and coordinated monitoring
5. transparency
6. continuous improvement.

Performance is assessed using activity-based evidence.

The objective of the framework is to improve the way that Resources Safety and Health performs as a regulator and to ensure a more accountable and transparent regulatory system through public reporting of performance activities. The framework also assists Resources Safety and Health to identify opportunities for improvement and better target resources.

Under the framework, performance is self-assessed annually against key performance indicators. Assessment includes stakeholder consultation through an industry stakeholder survey. The self-assessment was reviewed by the Queensland Government Internal Audit Service.

The first reporting period covered 1 July 2017 to 30 June 2018 and the report was published in December 2018.

The self-assessment found Resources Safety and Health:

- is engaged with regulated industries, other regulatory agencies and academic and scientific institutions
- is delivering against the key performance indicators and performance measures
- is effectively managing the balance between supporting industry through regular engagement and consultation and enforcing the legislation to achieve better safety and health outcomes.

Areas for improvement highlighted by the self-assessment include:

- improving understanding within industry of the risk-based approach Resources Safety and Health inspectorates take when monitoring compliance
- improving the website to make it easier for stakeholders to find the information and guidance material to assist them in their day-to-day operations.

Queensland Mines Inspectorate self-assessment report

In relation to the Queensland Mines Inspectorate, the self-assessment showed it was achieving its key performance indicators, with particularly strong support from stakeholders. The survey was completed by 33 coal mining stakeholders, 23 mineral mining stakeholders, and 22 quarrying stakeholders.

In all survey questions, the inspectorate received ratings from stakeholders of average or better from more than 80 per cent of respondents and, in all but two questions, ratings of good or very good from more than 70 per cent of respondents.

Table 11: Queensland Mines Inspectorate stakeholder survey results^{8,9}

QUESTION	VERY GOOD/ GOOD	AVERAGE	POOR/ VERY POOR
Mines Inspectorate staff demonstrate an understanding of your operation	73%	10%	2%
Overall, how well do you feel the Mines Inspectorate performs in terms of being a proactive safety and health regulator?	85%	10%	3%
To what extent do you feel the Mines Inspectorate supports positive safety and health outcomes for your organisation?	60%	26%	9%
Raise awareness and promote safety and health outcomes - How well does the Mines Inspectorate perform in the delivery of these functions?	71%	12%	4%
Delivery of functions - How well do you think the Mines Inspectorate performs?	78%	12%	4%
Did you access, download or receive any resources from Resources Safety and Health during the last 12 months? (quality and ease of access)	29%	42%	19%
Compliance activities and complaints processes - How well does the Mines Inspectorate perform in the delivery of these functions?	76%	9%	4%
How well do you think the Mines Inspectorate performs when working with industry to reduce the likelihood and consequence of serious incidents?	75%	10%	3%
Open, transparent and responsive in their dealings with industry	72%	12%	2%
Consultation or engagement with industry on legislative or major policy changes (targeted survey question)	71%	13%	5%

⁸ Respondents were provided with an option to answer *unsure*.

⁹ The Resources Safety and Health performance accountability framework is available on the Business Queensland website: <https://www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/legislation-standards/performance-accountability-framework>

Mine emergency exercise

All Queensland underground coal mines must run annual simulations to test their readiness for emergencies. In addition to their own exercises, each year one mine hosts a level 1 emergency exercise. These exercises have been held annually since 1998 and are monitored by assessors from the Queensland, New South Wales and international coal mining communities.

In 2018–19, the level 1 mine emergency exercise was held on 13 July 2018 at Grosvenor coal mine near Moranbah in Central Queensland. Grosvenor mine is an underground longwall coal mine located approximately five kilometres north of Moranbah.

This was the 21st level 1 mine emergency exercise to be held at a coal mine in Queensland.

The scenario for the exercise was based on the Upper Big Branch mine disaster in 2010 in the United States of America where the shearer ignited a pocket of gas in the tailgate and the resulting coal dust explosion caused 29 fatalities.

The exercise was designed to test:

- the ability for coal mine workers to self-escape and wear self-contained self-rescuers and compressed air breathing apparatus
- the duration the team on the longwall can wear self-contained self-rescuers
- Queensland Mines Rescue Service deployment time
- formation of an incident management team on a Friday
- interface with Queensland Police Service relating to multiple fatalities
- Simtars/Queensland Mines Inspectorate/industry safety and health representative response
- electronic information system
- social media response
- the recovery of personnel/casualties by Queensland Mines Rescue Service
- mine fatality protocols.

In total, 33 assessors took part with representatives from industry, unions, government and mines rescue bodies. A number of recommendations were made for improvement for the mine and for the industry more broadly.



Figure 9: Level 1 mine emergency exercise, 2018, Grosvenor

Key industry recommendations included:

- Three-monthly emergency response training—self-escape, first response, firefighting—and ensure all workers feel confident and comfortable in using emergency equipment.
- Develop an emergency response standard to ensure that all mines have the same
 - coloured escape way droppers
 - life line protocols for cones and installation
 - non-verbal communications
 - communications between evacuating workers in their group and when they meet other groups
 - compressed air breathing apparatus spacing
 - compressed air breathing apparatus location ancillaries: telephones/DACs, mine plans, white boards etc
 - hat colours depicting worker experience/role.
- Queensland Mines Rescue Service and the industry to work together to identify a streamlined way to ensure that the Mine Re-entry Assessment System information is populated in a streamlined manner and that all data entry is verified.
- Adopt an industry-wide data management system for operational management and emergency response and standardised access for external agencies.
- Review communication with next-of-kin to ensure families are informed of any casualties prior to any information being published publicly.

Level 1 mine emergency exercise reports are published to allow all mine sites and other agencies to review the recommendations and use them to improve their emergency response systems.

In response to the conclusions and recommendations included in this report, and previous level 1 reports, a review will be conducted regarding whether to implement the level 1 exercise in two parts:

1. Run the normal level 1 exercise to evaluate the capability of workers to self-escape and respond to the scenario they face, the mine to form an incident management team and conduct data analysis to see if a mines rescue re-entry to the mine is acceptable.
2. To have people underground ready for the exercise as assessors and casualties to test Queensland Mines Rescue Service emergency response capabilities as the second part of the exercise. In this case, an incident action plan and re-entry assessment would already be prepared and will facilitate the deployment of mines rescue teams once sufficient numbers are present on site.

A full report of the exercise can be found on the Business Queensland website at www.business.qld.gov.au.

Stakeholder engagement and education

The Queensland mine safety and health regulatory model gives equal voice to government, mine operators and mine workers.

The inspectorate engages with operators and workers via formal and informal means to ensure that all relevant stakeholders are able to provide feedback and have input into the regulatory and decision-making process.

In 2018–19, Resources Safety and Health presented at a variety of industry events, including at the Queensland Mining Industry Health and Safety Conference. The inspectorate also hosted and attended a range of industry forums, meetings and workshops, including:

- presentations to site senior executives at forums arranged by the Queensland Resources Council
- discussions with industry safety and health representatives at meetings and workshops convened by the Construction, Forestry, Mining and Energy Union

- presentation to site safety and health representatives at workshops convened by the Construction, Forestry, Mining and Energy Union
- representation on the Coal Mining Safety and Health Advisory Committee and the Mining Safety and Health Advisory Committee
- presentations and updates to advisory committees, including on dust data and the progress of recognised standard working groups
- representation on the statutory Board of Examiners
- participation in the Queensland Mining Industry Health and Safety Conference and membership of the organising committee
- participation in, and chairing of, the Occupational Health Mining Advisory Committee
- hosting an annual industry leaders briefing.

In addition, the inspectorate works collaboratively with industry and unions toward improving safety and health performance. As part of its regular program of work, the inspectorate also conducted a number of seminars, training programs and workshops aimed at improving industry and worker understanding of safety and health issues.

These forums included general mine safety and health meetings, workshops for specific issues or groups—for example, for airborne contaminants such as respirable dust, polymeric chemicals and diesel particulates, quarry operations, and electrical and mechanical related hazards—and training for medical professionals involved in mine worker health assessment.

CASE STUDIES

Worker survives irrespirable atmosphere

A mine heading at an underground mineral mine was being progressively de-watered to enable re-entry to old workings and to establish a ventilation circuit.

A pump fitter entered the unventilated heading in a light vehicle to check a sump pump when the vehicle's engine stopped. While the fitter was investigating why the engine had stopped, he experienced difficulty breathing and identified his heart was beating rapidly. He called emergency over the radio, donned his self-rescuer and left the area on foot.

The mine rescue team, wearing breathing apparatus, investigated the scene and found low oxygen and high carbon dioxide levels.

The pump fitter donning his oxygen-generating self-rescuer prevented this incident from escalating.

The inspectorate issued a safety alert and made a number of recommendations, including that all mines should complete an audit of all unventilated headings to ensure they are barricaded/secured to prevent inadvertent access, signposted as to the nature of the hazard, and accurately depicted on plans and other relevant documentation.

Miner struck by rockfall at development face

During charging of a perimeter hole on a development heading at an underground mineral mine, around 11 tonnes of rock fell from the middle and upper portions of the face, trapping an operator in a Normet Charmec basket.

While only minor injuries were sustained, the rockfall could have resulted in a fatality.

The incident highlights how hazard controls that exclude routine face support and rely instead on visual assessment, interpretation, mechanical and hand scaling and discretionary action by individuals may not be effective for this type of activity or situation.

In addition to this incident, there have been six other incidents in Queensland mines since 2015, where individuals have been seriously injured by rocks that have fallen from the face.

The inspectorate issued a safety bulletin and recommended that all underground mines consider adoption of routine face support in addressing this hazard.

MINE DUST LUNG DISEASES

Mine dust lung diseases are caused by long-term exposure to high concentrations of respirable dust generated during mining and quarrying activities and include a range of occupational lung conditions. Coal workers’ pneumoconiosis and silicosis are two of the more common mine dust lung diseases which can affect mine workers.

When the issue first re-emerged, it was coal workers’ pneumoconiosis that was originally investigated. However, it was soon realised that the issue of mine dust lung diseases was far more complex and a broader response was required.

As at 30 June 2019, there have been 109 confirmed cases of mine dust lung disease recorded in Queensland mine workers since 1984, including cases of coal workers’ pneumoconiosis, silicosis, asbestosis, and chronic obstructive pulmonary disease.

Of this total, there have been 81 reported cases among current and former Queensland coal mine workers whose experience was in coal mining only. This included 27 cases reported in 2018–19.

There have been 18 reported cases among workers with experience in both coal mines and mineral mines and/or quarries, of which three cases were reported in 2018–19.

There have been 10 reported cases among current and former Queensland mineral mine and quarry workers who have worked in mineral mining and/or quarrying only. Two of these cases were for workers with experience in quarries only. This included five cases reported in 2018–19.

As a result of improvements made to the screening process and increased awareness of mine dust lung disease, it is reasonably expected that the number of reported disease cases will increase.

Other improvements to the dataset disease cases include legislated requirements for mines to report known cases of prescribed diseases and the provision of data about accepted workers’ compensation claims from the Office of Industrial Relations. Further improvements to the dataset are expected as a result of the Queensland Government’s Notifiable Dust Lung Disease Register and associated reporting requirements, which commence in 2019–20. The Australian Government, through Safe Work Australia, is also aiming to develop a notifiable occupational health dust lung disease database.

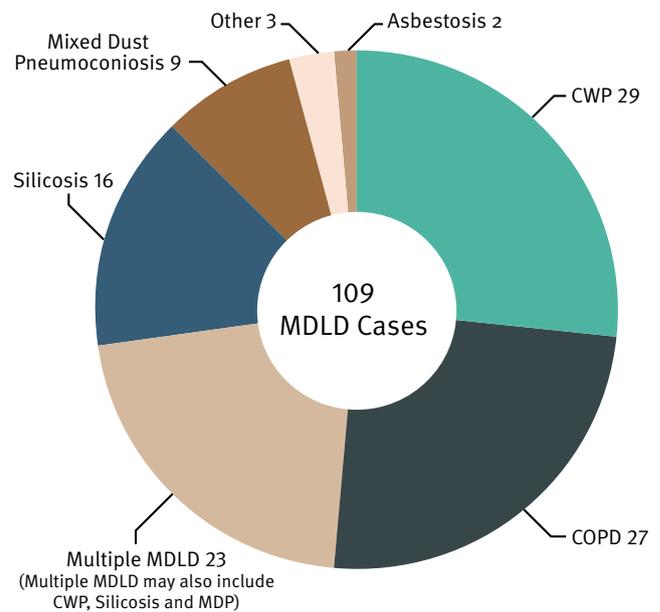


Figure 10: Reported cases of mine dust lung disease for all mining and quarrying, 1984–30 June 2019

Notifiable Dust Lung Disease Register

New legislation which requires doctors to notify the Department of Health of all mine and other occupational dust lung diseases was passed in the Queensland Parliament in April 2019.

The *Health and Other Legislation Amendment Act 2019* amended the *Public Health Act 2005* to create the Notifiable Dust Lung Disease Register to record cases of coal workers' pneumoconiosis, silicosis and other notifiable dust lung conditions caused by occupational exposure to inorganic dust.

The new register will help to better capture information about mine lung diseases and addresses one of the key recommendations of the Coal Workers' Pneumoconiosis Select Committee.

The amendments require the Department of Health to report annually about the number of notifications received. The register is not made public and identifying information is not accessible by members of the public or employers.

Reforms to manage mine dust lung disease in coal mine workers

In 2018–19, further improvements were made to embed and sustain the reforms to the Coal Mine Workers' Health Scheme resulting from the recommendations of the independent review performed by the Monash University Centre for Occupational and Environmental Health in collaboration with the University of Illinois at Chicago. These improvements included further amendments to the Coal Mining Safety and Health Regulation 2017 that:

- introduced health surveillance as a purpose of the scheme
- enabled health surveillance by allowing the department to release data for research purposes
- increased the minimum frequency of chest X-ray and spirometry examinations to five years for above-ground workers
- established a mandatory approved provider framework to ensure only medical providers approved by the department can carry out assessments and examinations
- incorporated a right to a respiratory health assessment for retired and former workers.

Other significant improvements include the full transition to Australian-based dual reading of chest X-rays by Lungscreen Australia, new accreditation programs for doctors, providers of spirometry and X-ray imaging, and the appointment of the Thoracic Society of Australia and New Zealand to provide spirometry clinical audit services.

A key component of the approved provider framework requires registered doctors to complete mine site visits. Visits are coordinated by the department's doctor training provider and, during 2018–19, doctor visits were hosted by Moranbah North, Caval Ridge and Oaky Creek mines.

A performance audit was commenced by the Queensland Audit Office, which includes consideration of the reforms to address mine dust lung disease. This audit will also provide the further review of the revised respiratory component of the scheme as recommended by the Monash University.

A co-investment with the Australian Coal Association Research Program into research of confirmed cases of coal mine dust lung disease was delivered by the Wesley Dust Disease Research Centre. Key findings of the research included that diseases diagnosed covered a broad range of conditions including coal workers' pneumoconiosis, silicosis and chronic obstructive pulmonary disease. It also found that a proportion of silicosis cases had advanced in severity, highlighting the increased risk from silica exposure in comparison to nearly all coal workers' pneumoconiosis cases being at an early stage of disease. Six cases from the study were considered to have reached the threshold of progressive massive fibrosis, the most severe stage of disease. It was shown that the risk is not limited to underground workers alone, with 27 per cent having never worked underground. The research shows why the reforms made to the scheme are critical to ensure disease is detected early.

In 2019–20, the department will continue to progress a program of clinical and administrative audits of medical providers to ensure compliance with the scheme. The department will also invest further into research and health surveillance to inform primary prevention measures. This will include the continued transition to an electronic health records platform and progressing the delivery of a mobile health service with the Queensland Government providing \$1.2 million in funding over the next two years.

While any diagnosis is cause for concern, in comparison to some coal mining jurisdictions, such as the United States of America where health screening is not mandatory and participation is low relative to Queensland, the number of reported cases of mine dust lung disease in Queensland is comparatively few. A recent report from the United States¹⁰ indicates that between 1996 and 2016, more than 2400 coal mine workers were diagnosed with the most severe stage of disease—progressive massive fibrosis. In Queensland since 1984, eight cases of progressive massive fibrosis have been reported to the department.

Queensland’s mandatory health surveillance scheme for coal mine workers aims to detect any signs of mine dust lung disease early. Changes made to enhance the quality of examinations under the scheme as recommended by the Monash review ensures the likelihood of detection is maximised. In a voluntary scheme, it is more likely workers won’t be checked and any disease will have progressed to a severe case before being detected.

Most of Queensland’s reported cases have been identified during the early stages of disease and removing or reducing the worker’s exposure to dust can prevent symptoms from progressing. Early stage mine dust lung disease has a good prognosis. Generally, it does not result in any symptoms and lung capacity remains within a normal range. However, health surveillance is key to identifying the disease in its earliest stages so that exposure can be reduced to prevent the disease from progressing.¹¹

Chest X-ray dual reading program

All chest X-rays are now examined against the International Labour Organisation’s International Classification of Radiographs of Pneumoconioses (ILO Classification). The ILO Classification is the accepted international standard to describe and code potential abnormalities in chest X-rays that may indicate a mine dust lung disease.

From 1 July 2016 to 30 June 2019, the department sent more than 49,000 chest X-rays to the United States for assessment by National Institute for Occupational Safety and Health approved B-readers. More than 37,000 chest X-rays have been reported and returned to the department. From 1 March

to 30 June 2019, Lungscreen Australia’s certified B-readers also undertook more than 6000 chest X-ray reports.

Across both dual reading programs, 99 per cent of chest X-rays have returned a negative ILO Classification result. One per cent returned a positive result and, of these, only 18 resulted in a mine dust lung disease diagnosis.

The use of X-ray readers from the United States has been an interim measure until Australian radiologists gained the internationally recognised B-reading qualification and sufficient experience in performing B-reads. With 13 qualified Australian B-readers now on the department’s register of approved providers, the transition to an Australian X-ray reading service is complete.

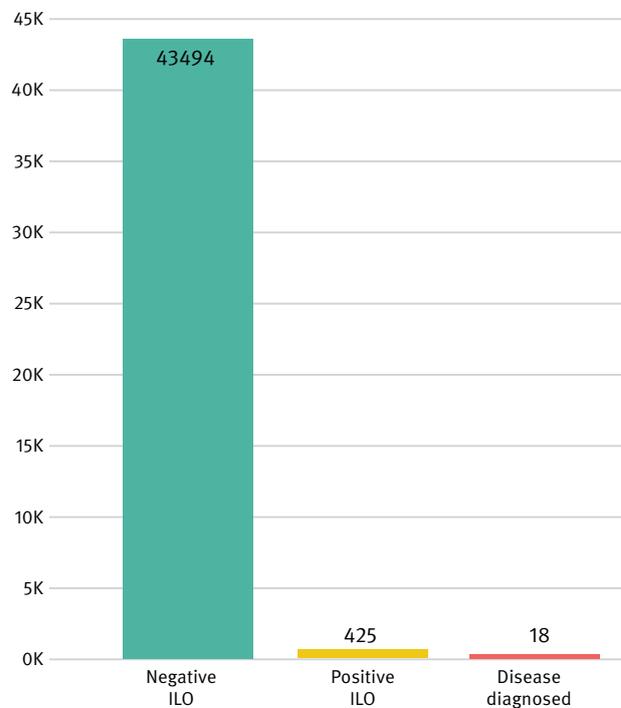


Figure 11: X-ray read results from July 2016 to 30 June 2019

¹⁰ AlMBERG KS, Halldin CN, Blackley DJ, et al. Progressive Massive Fibrosis Resurgence Identified in U.S. Coal Miners Filing for Black Lung Benefits, 1970-2016. *Ann Am Thorac Soc.* 2018; 15(12):1420–1426.

¹¹ Dr Robert Edwards, “Miners’ Health Matters”, Department of Natural Resources Mines and Energy, <https://www.dnrme.qld.gov.au/miners-health-matters/detection> [video], 2018

Worker medical records

As part of its surveillance activities, the department's Health Surveillance Unit collects and maintains the health assessment records of all coal mine workers in Queensland. These records are generated and submitted by appointed medical advisers, whose role is to assess fitness for duty and identify and detect disease on behalf of operators and coal mine workers.

The Health Surveillance Unit received an average of 400 health assessment records each week in 2018–19 and holds more than 400,000 health records for coal mine workers—including records of health assessments conducted under the scheme—as well as health assessments conducted under the previous Queensland Coal Board Medical dating back to 1983.

Reforms to manage mine dust lung disease in mineral mine and quarry workers

Silicosis (a type of pneumoconiosis) and chronic obstructive pulmonary disease are occupational lung diseases caused by inhalation of respirable crystalline silica and other dust. Crystalline silica is a component of many types of mineralised and quarried rock extracted at Queensland mineral mines and quarries and represents the highest risk in relation to lung disease.

However, unlike the coal mining industry, where all coal mines generate coal dust risk in their operations, not all mineral mines and quarries have a respirable crystalline silica risk due to variable geological conditions.

Recent legislative changes have resulted in lung disease in mineral mines and quarry workers being reportable to the Department of Health for inclusion on the Notifiable Dust Lung Disease Register. This will help to better capture information about mine lung diseases and to implement programs to prevent disease from occurring.

In addition to offering free lung health checks to retired and former coal mine workers, the department has extended these checks to retired and former mineral mine and quarry workers.

Health surveillance program

In 2018–19, the department consulted with stakeholders to explore the development of a health surveillance program for mineral mine and quarry workers which would offer similar protections as those provided for coal mine workers. This consultation resulted in the identification of a number of potential features of a mineral mine and quarry workers' health scheme for further consultation and consideration including:

- a requirement to implement a health surveillance program where there is a risk to worker health due to respirable crystalline silica
- specific requirements for doctors performing health assessments
- establishment of approved training programs for medical providers—wherever possible using the programs already established for the Coal Mine Workers' Health Scheme for spirometry and B-readers
- use of a diagnostic pathway approved by the Queensland Chief Health Officer for diagnosis and treatment of mine lung dust disease.

PEOPLE

The resources safety and health regulator is a multi-disciplinary cohort of regulatory professionals who are dedicated to the safety and health of mine workers and those affected by mining activities.

As at 30 June 2019, the inspectorate employed 44 mines inspectors who were located in three regions. Inspectors are supported by a small head office consisting of six staff, with further support provided by the Department of Natural Resources, Mines and Energy.

Inspectors work from five regional offices which are located close to the mining and quarrying operations which they regulate.

In 2018–19, the inspectorate maintained a stable operating environment with low staff turnover.

Mines inspectors have extensive experience in mining operations, and hold a range of skills, and trade, statutory and tertiary qualifications. This includes staff with:

- degrees in science and mining, electrical and mechanical engineering
- first class, second class and deputy’s certificates of competency
- certificates in open-cut examination and underground mine management
- postgraduate studies and undergraduate and professional certification in occupational hygiene and mine ventilation
- trade qualifications
- ergonomic qualifications
- diplomas in workplace inspection
- certificates in government investigation.

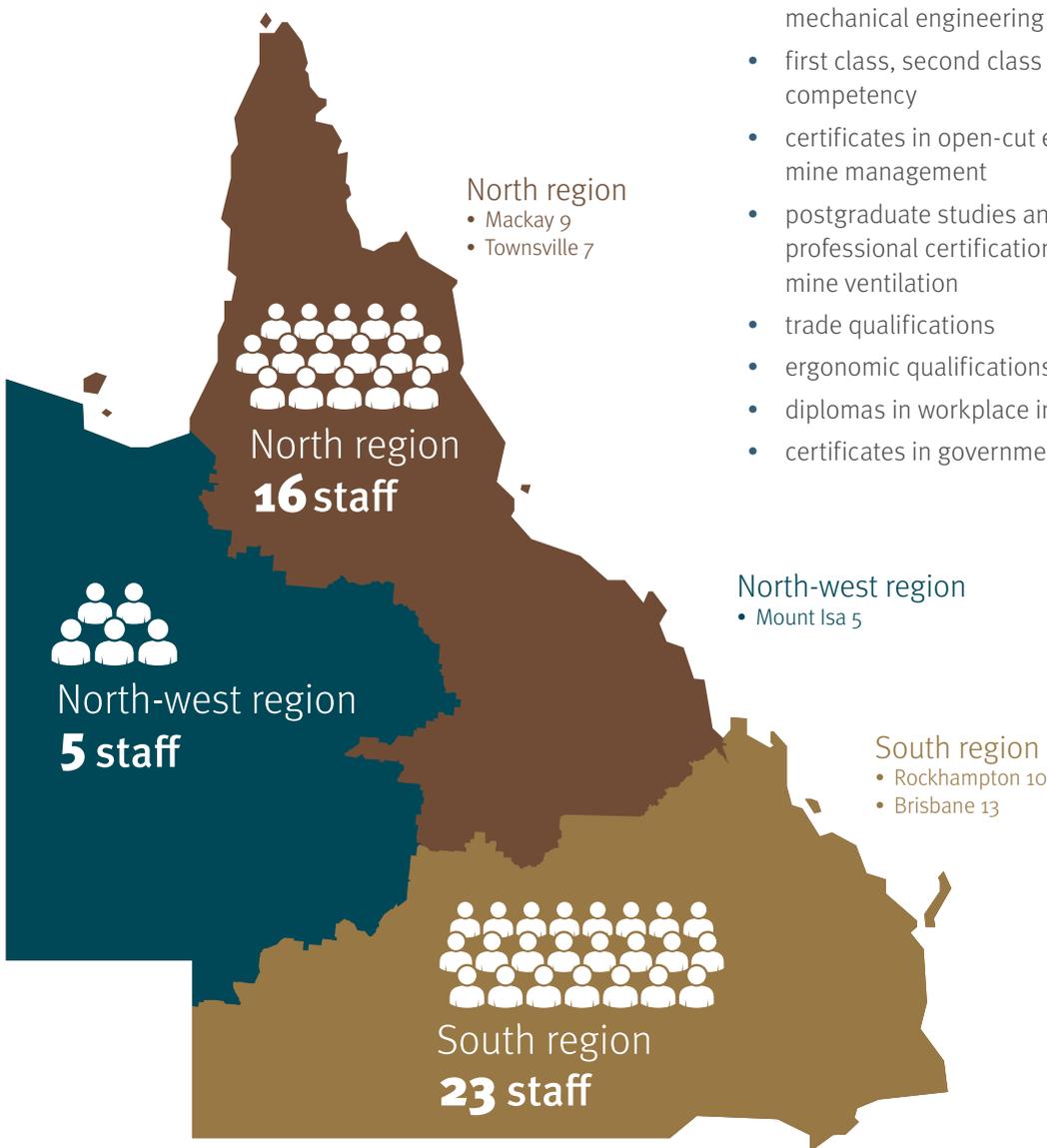


Figure 12: Location of mines inspectors in Queensland

In late 2018, the inspectorate farewelled Chief Inspector of Mines (Coal) Russell Albury. Russell joined the department as a Senior Inspector of Mines in 2014 and held the roles of Deputy Chief Inspector and Chief Inspector.

Russell was an experienced and respected regulator, a role which benefitted from his significant industry experience and pragmatic approach to compliance and enforcement. He will be sorely missed.

Future resourcing challenges

The inspectorate is staffed by highly experienced, well trained and competent industry professionals. One of the main future resourcing issues for the inspectorate is that it draws its workforce from the same limited talent pool as industry—the inspectorate, in fact, competes for the same resources. Therefore, as the industry experiences improving fortunes, there is a risk of losing highly qualified inspectors to industry.

In 2018–19, the inspectorate’s resources were affected by a number of emergent issues including five fatalities and the occurrence of an underground spontaneous combustion event at North Goonyella coal mine. A number of experienced senior inspectors also retired or took up positions elsewhere.

As part of the safety response, the Minister for Natural Resources, Mines and Energy announced the recruitment of three new inspectors and a chief inspector of mines.

Resourcing requirements

To monitor that the inspectorate is sufficiently prepared for any future resourcing challenges, the Commissioner for Mine Safety and Health is considering an evidence-based methodology to determine the future resource requirements of a modern mining safety and health regulator.

This is an ongoing effort to assess future resourcing requirements of the Queensland Mines Inspectorate.

Workforce skills development

Inspectors are highly skilled professionals who undertake an ongoing program of continuous professional development to ensure they further develop and maintain their skills and understand the contemporary safety and health issues facing the industry.

Mines inspectors undertake lead auditor training based on the requirements of the Diploma of Quality Auditing and the training is delivered by a registered training organisation. This training provides inspectors with essential skills in initiating, leading, reporting and participating in a quality audit, including conducting pre-audit planning, document review, on-site audit activities, entry and exit interviews, and instruction in the legal liabilities of auditors. In total, 20 mines inspectors have completed the diploma, with six receiving recognition of prior learning for the diploma in 2018–19.

In 2018–19, Resources Safety and Health rolled out a new program of training to enhance compliance and enforcement capability, replacing the Diploma of Workplace Inspections previously undertaken by inspectors with the Certificate IV in Government Investigations. At the end of 2018–19, the Certificate IV had been awarded to 13 mines inspectors, with one mines inspector part-way through the program and on track for completion in 2019–20. Sixteen mines inspectors had previously completed the Diploma of Workplace Inspections.

During the year, two inspectors also undertook an intensive *Managing regulation, enforcement and compliance* course with the Australia and New Zealand School of Government taught by Professor Malcolm Sparrow from the Harvard University John F Kennedy School of Government.

Inspectors also undertake specialist investigation training based on the *Incident Cause Analysis Method*. This methodology is a systematic approach to incident investigation which finds the root cause of incidents and accidents and makes recommendations on necessary remedial actions to reduce risk and prevent reoccurrence.

Inspectors also participated in a range of industry and professional society forums run by the:

- Mining Electrical Safety Association
- Institute of Quarrying Australia
- Australian Institute Mining and Metallurgy
- Institute of Chemical Engineers
- Australian Institute of Occupational Hygienists.

Inspectors routinely present at these forums and participate in seminars, conferences, working groups and subcommittees. Inspectors are also represented on international and Australian standards committees to ensure that safety and health considerations are fully considered in the development and revision of codes and standards. Their engagement also enables them to remain current in their field and share relevant information with industry, original equipment manufacturers and other regulators.

Regulatory capture

The operational independence of the inspectorate is of paramount importance. The inspectorate works to minimise any possibility, or even perception, of regulatory capture occurring—regulatory capture is when a regulatory agency advances the interests of particular groups rather than acting in the public interest.

The inspectorate is aware of the risks of regulatory capture and mitigates this by ensuring inspectors complete a range of integrity and ethics training to raise their awareness of regulatory capture and how it may occur. This includes training in the Code of Conduct for the Queensland Public Service, complaints management, public sector ethics and ethical decision making. Training in this area is primarily conducted by the Office of the Queensland Ombudsman.

Internal policy provides an additional barrier. For example, for a period of at least six months from their appointment, a new inspector will not be assigned to inspect or audit the mine at which they previously worked. In addition, inspectors are not dedicated to specific mines or regions—they perform compliance activities based on their area of interest and skill set.

The Commissioner for Mine Safety and Health found no evidence of regulatory capture in 2018–19.

COMMISSIONER FOR MINE SAFETY AND HEALTH

The Commissioner for Mine Safety and Health aims to support a healthy and safe mining and quarrying industry in Queensland. The Commissioner achieves this by providing informed advice to the Minister and Queensland Parliament; engaging and collaborating with stakeholders and promoting best practice in safety and health; monitoring and reporting on the performance of the department in regulating mine safety and health; ensuring that legislation is effective and is achieving its purpose of keeping the mining industry workforce safe and healthy; and resolving complaints and recommendations for prosecution.

The Commissioner regularly engages with stakeholders at all levels of the mining industry, unions and government. Through these engagement activities, the Commissioner is able to hear first-hand the thoughts and concerns of all parties and get a more thorough understanding of the performance of the inspectorate.

In 2018–19, the Commissioner:

- met regularly with, and provided advice to, the Minister for Natural Resources, Mines and Energy
- met regularly with the Executive Director of Resources Safety and Health
- met regularly with Queensland Resources Council
- met regularly with mining-related unions
- attended and presented at the annual Queensland Mining Industry Health and Safety Conference
- attended and presented at the annual Quarrying Safety and Health Conference
- met with various site senior executives
- published a quarterly stakeholder newsletter.

Monitoring the performance of the Queensland Mines Inspectorate

The Commissioner for Mine Safety and Health uses a three-pronged approach to monitor the performance of the Queensland Mines Inspectorate in administering the provisions about safety and health under the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying*

Safety and Health Act 1999. The Commissioner reports on this performance formally to the Minister for Natural Resources, Mines and Energy and the Queensland Parliament via a written annual performance report. This three-pronged approach includes formal independent reviews of performance, reviews of activities and performance data from the inspectorate and other sources, and formal and informal engagement with industry stakeholders.

Formal independent reviews of performance

One of the key components of the Commissioner's approach to monitoring the performance of the Queensland Mines Inspectorate is formal independent reviews of performance. These reviews may be conducted by the Commissioner or by external agencies.

Where there is an identified need, the Commissioner will instruct independent external consultants to review certain aspects of the performance of the Queensland Mines Inspectorate. In all instances, a procurement process is followed and reviews are performed by knowledgeable experts who are able to provide qualified insight into regulatory performance in mining safety and health.

The Commissioner may also use the knowledge and experience of the two safety and health advisory committees to review aspects of the performance of the Queensland Mines Inspectorate. These reviews may take the form of formal reviews or may be conducted as industry workshops or forums which involve a wider selection of knowledgeable stakeholders to take a deep dive into the issues related to specific identified topics.

In some cases, reviews of certain aspects of the performance of the Queensland Mines Inspectorate are conducted as part of the normal functions of government and the regulatory environment.

Reviews of activities and performance data from the inspectorate and other sources

The Commissioner regularly examines industry and inspectorate performance data and statistics—independently and in conjunction with the advisory committees—on issues such as methane, dust, tyres and rims, and diesel particulate matter.

The Commissioner analyses the data in the context of an evidence-based evaluation of the effectiveness of the actions taken to address identified issues in mine and quarry safety and health. The Commissioner also monitors the inspectorate's performance against their compliance KPIs.

When internal reports and analysis is completed by the inspectorate, the Commissioner reviews the reports to ensure that recommendations from such reports are implemented where applicable and appropriate.

The Commissioner also reviews the results of the Resources Safety and Health Performance Accountability Framework which has been implemented to ensure the regulator is more accountable and transparent in the way it operates through public reporting of its performance activities.

Engagement with industry stakeholders

The Commissioner meets regularly with industry stakeholders to hear first-hand the thoughts and concerns of all parties. The Commissioner also chairs the tripartite safety and health advisory committees which feature representation from industry operators, workers and the inspectorate.

As part of this stakeholder engagement, the Commissioner is able to seek information from stakeholders regarding the performance of the inspectorate.

The Commissioner has implemented a strategic communication and stakeholder engagement plan to ensure effective engagement with external stakeholders.

Advisory committees

The Commissioner for Mine Safety and Health is the chair of the Coal Mining Safety and Health Advisory Committee and the Mining Safety and Health Advisory Committee.

The advisory committees are tripartite bodies formed under the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999* to provide advice to the Minister on coal mining and mining and quarrying safety and health. The advisory committees are an integral part of the governance arrangements that are in place to manage safety and health in the industry.

The primary function of the advisory committees is to give advice and make recommendations to the Minister about promoting and protecting the safety and health of people at coal mines and mineral mines and quarries. The advisory committees also have the function of establishing, recognising and publishing the competencies accepted by them as qualifying a person to perform the stated tasks, and the safety and health competencies required to perform the duties, of a person under the respective Acts.

The advisory committees each consist of nine members representing the Queensland Government, workers and operators, and an independent chair. Members are nominated to, and appointed by, the Minister. The Commissioner for Mine Safety and Health is the chair of each advisory committee.

In 2018–19, the Coal Mining Safety and Health Advisory Committee met eight times. Three of the meetings were non-quorum meetings. The Mining Safety and Health Advisory Committee also met eight times. One meeting was a non-quorum meeting.

Under the respective Acts, the chair of the advisory committee must prepare an annual report on the advisory committee's operations for the year. These reports are available from the Queensland Government publications portal.¹²

¹² www.publications.qld.gov.au

Performance against strategic objectives

COMMISSIONER PROVIDES INFORMED AND INDEPENDENT ADVICE TO MINISTER AND QUEENSLAND PARLIAMENT

Commissioner regularly meets with Minister to provide advice and research latent emerging safety and health issues to provide evidence based advice to the Minister

Achieved

- 7 scheduled meetings
- 4 extraordinary meetings

Commissioner's and advisory committee annual performance reports completed and handed to Minister by 31 October

Achieved

- Reports handed to the Minister 30 October 2018

IDENTIFY THE RISK OF FATIGUE ON MINE SAFETY AND HEALTH

Conduct fatigue management workshop

Achieved

- Fatigue workshop conducted and meetings held to advance fatigue management outcomes.

OVERSIGHT THE ACTIVITIES OF THE QUEENSLAND MINES INSPECTORATE

Conduct formal internal and external independent reviews of performance

Achieved

- Ongoing internal monitoring of resourcing requirements initiated.
- Specialist advice regarding diesel particulate matter obtained.

Review activities and performance data from the inspectorate and other sources

Achieved

- Commissioner regularly examines industry and inspectorate performance data and statistics and the outcomes of audits, inspections and investigations conducted by the inspectorate.
- Commissioner reviews results of the Resources Safety and Health Performance Accountability Framework.

Engagement with industry stakeholders to assess performance

Achieved

- The Commissioner engaged with key stakeholders including with the Queensland Resources Council, Cement Concrete and Aggregates Australia, Queensland Boulder Opal Association of Queensland, Queensland Sapphire Miners' Association, and with 12 individual external mining and quarrying industry stakeholders.

MONITOR THE WORK OF EXTERNAL REGULATORS WHICH MAY IMPACT ON MINE SAFETY AND HEALTH REGULATION IN QUEENSLAND

Liaise with Safe Work Australia regarding airborne contaminants review and Skills Australia on review of supervisor competencies

Achieved

- Commissioner met regularly with Safe Work Australia

PROVIDE FEEDBACK ON ALL LEGISLATION, REGULATORY STANDARDS, GUIDELINES AND GUIDANCE NOTE PROPOSALS

Commissioner and advisory committees provide feedback on legislation, regulatory standards, guidelines and guidance note proposals to the Minister in a timely manner.	Achieved	<ul style="list-style-type: none"> Feedback provided on 8 recognised standard proposals, 5 new and 2 amended recognised standards endorsed by CSMHAC and 1 new and 1 amended guideline endorsed by MSHAC.
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COMMUNICATE AND ENGAGE WITH INDUSTRY AND STAKEHOLDERS TO PROMOTE SAFETY AND HEALTH

Commissioner stakeholder communication and engagement strategy is implemented	Achieved	<ul style="list-style-type: none"> Mine safety and health matters newsletter published quarterly. Website content updated by Commissioner’s office regularly as needed.
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Engage with stakeholders at industry events and meetings	Achieved	<ul style="list-style-type: none"> The Commissioner promoted safety and health with stakeholders during: <ul style="list-style-type: none"> 6 mine and quarry site visits 7 Queensland Resources Council meetings 3 Cement Concrete and Aggregates Australia meetings 1 meeting with the Queensland Boulder Opal Association of Queensland 1 meeting with the Queensland Sapphire Miners’ Association 6 industry functions and mine rescue competitions 12 meetings with individual external mining and quarrying industry stakeholders. The Commissioner delivered 12 presentations at mining and quarrying industry events. Commissioner attended 2 Occupational Health Mining Advisory Committee meetings as an observer.
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Develop and publish evidence-based mining-related health information sheets	Progress towards achievement	<ul style="list-style-type: none"> Prescription medicine fact sheet sent to medical panel for ratification.
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Actively promote awareness in the mining industry that it is an offence for any person to take reprisal action against anyone who has made a safety complaint or raised a safety issue—Recommendation 22 of the Coal Workers’ Pneumoconiosis Select Committee.	Achieved	<ul style="list-style-type: none"> The Commissioner promoted awareness at 5 industry events. The Commissioner promoted awareness in the April 2019 edition of her Mine Safety and Health Matters newsletter. The Commissioner promoted awareness during discussions with mine and quarry workers at various mine and quarry site visits.
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Fatigue management workshop

On 18 July 2018, the Commissioner for Mine Safety and Health and the Occupational Health Mining Advisory Committee held a workshop which examined the current fatigue management practices in the mining and quarrying industry.

The workshop examined the impacts of fatigue on the health and safety of coal mine workers and provided advice to the Minister on strategies to minimise the risks from fatigue to workers.

The workshop was attended by a range of mining industry stakeholders from both the coal and mineral mining and quarrying industries and provided an opportunity to examine the causes of fatigue-related incidents and to further explore strategies that can be implemented to minimise the risk to workers.

Representatives from the Queensland Police Service, National Heavy Vehicle Regulator, and Crown Law presented to attendees and specialist fatigue expert Professor Naomi Rogers discussed the latest fatigue research.

Outcomes of the workshop included a recommendation that Resources Safety and Health revisit the current Guidance note for fatigue risk management and a call for greater sharing of information related to fatigue within the industry.

Following on from the workshop, the Commissioner for Mine Safety and Health arranged for Executive Legal Consultant, Crown Law, Mr John Tate to brief the advisory committee on the latest case law related to safety science, regulatory and legal perspectives on fatigue, and fatigue management. Mr Tate also provided a summary of the seminal case on fatigue *Kerle v BM Alliance*¹³ and the Coroners Court of Queensland inquest into the death of Jo-ann Peta Fuller.¹⁴

Mount Isa Lead Health Management Committee

In 2012, the Department of Health established the Mount Isa Lead Health Management Committee, a ministerial committee to address health risks for young children arising from the environmental lead exposure—specifically young children aged 0–4 years and other residents of Mount Isa.

The committee is comprised of senior state and local government representatives and elected community representatives. The committee reports to the Minister for Health and is chaired by the Chief Health Officer for Queensland, Dr Jeannette Young. The Commissioner for Mine Safety and Health represents the Minister for Natural Resources, Mines and Energy on the committee.

The primary objective of the committee is to increase the number of children accessing free blood level testing programs available throughout the community.

A capillary testing program through point-of-care testing commenced in September 2016 and Mount Isa Hospital continues with routine opportunistic blood level testing.

The second objective of the committee is to deliver up-to-date information on living safely with lead to the Mount Isa community through community education and awareness. This has been achieved by the Squeaky says “be lead smart” campaign, a healthy eating campaign, Back Yard Improvement program and competition, and the launching of the LEADSmart mobile phone application.

The Mount Isa Lead Health Management Committee did not meet in 2018–19.

¹³ *Kerle v BM Alliance Coal Operations Pty Ltd (2016) 262 IR 381*

¹⁴ *Coroner’s inquest into the death of Jo-Anne Peta Fuller*

ABBREVIATIONS AND DEFINITIONS

Abbreviations

COPD	Chronic obstructive pulmonary disease
CWP	Coal workers' pneumoconiosis
MDLD	Mine dust lung disease
OEL	Occupational exposure limit
RCS	Respirable crystalline silica
RD	Respirable dust

Definitions

Coal mine:	Mine subject to the Coal Mining Safety and Health Act 1999 and associated Regulation
High potential incident:	An event, or a series of events, that causes, or has the potential to cause, a significant adverse effect on the safety or health of a person
Mineral mine:	Mine subject to the <i>Mining and Quarrying Safety and Health Act 1999</i> and associated Regulation
Lost time injury	An injury resulting in an injured person being unable to work the next day or a longer period, whether they are rostered to work or not
Quarry:	Excavation of hard rock for use in construction (operations covered by the <i>Mining and Quarrying Safety and Health Act 1999</i> and associated Regulation)
Queensland Mines Inspectorate:	Regulatory unit within Resources Safety and Health, Department of Natural Resources, Mines and Energy
Serious accident:	An accident at a mine that causes: a) the death of a person or b) a person to be admitted to a hospital as an inpatient for treatment of the injury



APPENDIX: RECOMMENDATION TO ESTABLISH AN INDEPENDENT MINE SAFETY AND HEALTH AUTHORITY

In September 2016, the Queensland Parliament appointed a Coal Workers' Pneumoconiosis Select Committee to inquire into the re-emergence of coal workers' pneumoconiosis.

On 29 May 2017, the select committee handed down its report containing 68 recommendations, some of which concerned the structure of the regulator. The recommendations sought to ensure the independence of resources safety and health regulation from government's industry facilitation functions.

On 8 September 2017, the Queensland Government handed down its response to the select committee's report and indicated support, or in-principle support, for all 68 recommendations. In supporting the recommendations, the government accepted the intent of the recommendations and acknowledged that additional analysis and consultation was required to determine the most appropriate implementation pathway.

Specifically, in relation to the issue of structural changes to the regulator, the Queensland Government committed to establishing a project management office, led by a person independent of existing government agency structures, to develop options for alternative regulatory models and provide advice to the Minister on a preferred model.

The project management office sought advice from relevant industry stakeholders on whether the new model proposed for the regulator by the select committee was best placed to deliver independence and the standards of governance expected of public authorities. The paper explored this issue by considering the model proposed by the select committee, as well as alternative options for a regulator model. The second discussion paper focussed on funding options to support the potential regulator model. A significant volume of stakeholder feedback was received on the proposed models.

The project management office concluded its work in June 2018 and provided advice to the Minister for Natural Resources, Mines and Energy for consideration. In response to significant stakeholder comments provided through the

consultation process, the project management office recommended that the Queensland Government consider additional components as part of the potential regulator model.

An additional information paper was published in September 2018 following government consideration of the project management office report and further consultation with stakeholders was conducted. Stakeholder comments were considered by the Queensland Government in deciding a final regulator model for resources safety and health in Queensland.

The Resources Safety and Health Queensland Bill 2019 was introduced into the Queensland Parliament on 4 September 2019 and seeks to establish a revised regulatory framework for resources safety and health in Queensland that engenders worker trust, ensures appropriate independence and transparency, and enhances independent oversight of the performance of the regulator. The Bill establishes an independent statutory body, named Resources Safety and Health Queensland, which will regulate safety and health across the coal mining, mineral mining and quarrying, petroleum and gas, and explosives industries.

Through the consultation process, stakeholder feedback indicated a preference to retain a commissioner role to provide a source of expert advice to the Minister and improved oversight of regulatory performance. On the basis of that feedback, the project management office recommended the establishment of an independent Commissioner for Resources Safety and Health with functions across the resources sector. The role will be established separate to Resources Safety and Health Queensland and will replace the existing Commissioner for Mine Safety and Health position.

The project management office also recommended the establishment of an advisory council to provide advice to the Minister on the performance of the regulator, develop a five-year strategic plan to identify priority safety and health issues and establish action plans to address these, and

create a mechanism to identify and prioritise critical safety and health risks. This advisory council would replace the existing Coal Mining Safety and Health Advisory Committee and Mining Safety and Health Advisory Committee. This recommendation was tested in consultation by the Department of Natural Resources, Mines and Energy and was not supported. Stakeholders noted in particular the challenges of ensuring adequate representation on an advisory council and expressed satisfaction with current arrangements. Stakeholders favoured retaining the existing advisory committee structures with an increased strategic focus. The Bill amends the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999* to enhance the functions of the two existing advisory committees.

The project management office and stakeholders identified the need for independent prosecutorial decision-making. The project management office recommended that the independent Work Health and Safety Prosecutor be used to prosecute serious offences under the resources safety and health legislation.

Extensive consultation occurred as part of this process. Between March and May 2018, the project management office released two discussion papers and five focus papers. The project management office also undertook face-to-face meetings, held three public information forums and implemented open-house information sessions with stakeholders. The project management office report suggested that further consultation with key stakeholders was required to ensure stakeholders were fully aware and had an opportunity to comment on the additional components recommended in the project management office's regulator model. The government supported this approach and the department released an information paper and undertook targeted stakeholder consultation on the additional components of the regulator model proposed by the project management office between September and October 2018. Targeted consultation on the draft Bill also occurred with industry and union stakeholders in July and August 2019.

The Bill will achieve greater independent regulation of the resources safety and health industry, consistent with industry best practice.



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