



Commissioner for Mine Safety and Health

Annual performance report 2017–18

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30 October 2018

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 2018.

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 was 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* and other mining legislation
- 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* and other mining legislation.

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 administering 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 2017–18 are summarised in the body of this report. 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.

Data included in this report is accurate as at 19 October 2018. Minor changes may occur subsequent to the publication of this report as the data is further refined and analysed.

¹ Including the 15 recognised standards published on the Business Queensland website at www.business.qld.gov.au

² Including the two Queensland Guidelines published on the Business Queensland website at www.business.qld.gov.au

MESSAGE FROM THE COMMISSIONER

This year, the mining industry in Queensland has started to emerge from one of its most difficult periods in more than 20 years. The unprecedented challenge of the re-identification of mine dust lung diseases in 2015 caused many people to consider whether the industry had the level of commitment to safety and health standards expected by the Queensland community. Questions were also raised about the dedication and ability of the Department of Natural Resources, Mines and Energy, through its Resources Safety and Health division, to sufficiently regulate the industry, and whether it had the right mix of legislation, governance, resources and skills at its disposal.

Over the past three years, the industry and the department have undergone extensive reforms and I am happy to report that both have shown considerable character and a strong commitment to recognising the deficiencies that have led to these challenges. In a relatively short period of time, both the department and the industry have implemented substantial programs of work that have led to significant positive gains in safety and health outcomes for mine workers.

Mine fatality

I am once again saddened to report that a mine worker has lost his life while working at a Queensland mine.

On 5 August 2017, Daniel Springer was fatally injured while performing maintenance work at Goonyella Riverside coal mine.

I would like to express my deepest sympathies to Mr Springer's family, friends and colleagues. All Queensland mine workers have a right to go home safe and healthy every day.



Mine dust lung diseases

In 2017–18, the department completed the implementation of all 18 recommendations of the review of the respiratory component of the Coal Mine Workers' Health Scheme by the Monash University Centre for Occupational and Environmental Health. Improvements include regulatory amendments which provide compulsory chest X-rays and lung function tests, medical assessments for retiring and former coal mine workers, and mandatory reporting of mine dust lung diseases. This is a significant milestone and illustrates the department's commitment to establishing a world class health scheme for mine workers in Queensland and to educating mine workers and operators about the harmful effects of mine dust.

I congratulate the Resources Safety and Health Occupational Health and Hygiene unit on its outstanding commitment to stakeholder consultation throughout this process. The consultation model used serves as best practice to which Resources Safety and Health should aspire to in all of its consultation efforts to ensure that the views of the tripartite stakeholders are not only heard, but also considered when implementing significant changes to legislation and regulation.

In addition, the department has made significant progress in addressing the recommendations of the Coal Workers' Pneumoconiosis Select Committee. A number of legislative reforms have been progressed which I believe will provide stronger and clearer powers for the regulator. Administrative improvements have also been made which ensure greater accountability and transparency in the performance of the industry in relation to mine dust.

These reforms have had a significant and positive effect in reducing dust exposure and the risk to workers. In examining the performance of the department, it is clear to me that there are two key factors which have contributed to the highly improved results related to the challenge of mine dust lung disease. Firstly, the substantial regulatory changes which have been implemented have increased the level of monitoring of mine dust across all Queensland mines. Secondly, the unprecedented way that government, unions and employers have come together to quickly and effectively develop best-practice solutions and protections

for Queensland mine workers shows that there is a real desire across the whole industry to ensure that workers are protected from the hazards of mine dust.

This has resulted in a world-class system that detects signs of disease early and provides a safety net for Queensland coal mine workers who have been affected. One of the key components in this success is that participation in the Queensland respiratory health screening program is mandatory and, therefore, is able to detect the disease early.

As a result, Queensland shows a very low proportion of late-stage mine dust lung disease compared to the similar program in the United States of America, which is voluntary and only covers approximately 40 per cent of its 80,000 workers. However, to ensure that it remains effective, the department needs to remain vigilant and the system needs to be constantly audited and reviewed. We need to remember that mine dust lung diseases can be prevented. These positive gains and system improvements must be enshrined in the way the department does its work, otherwise there is a real risk that the mistakes of the past will be repeated in the future.

The challenge now for the department is to ensure that these reforms and improvements are propagated across mineral mines and quarries in addition to coal mines. Although there are significant operational and economic differences that have made it more difficult to implement these reforms across mineral mines and quarries, I would like to see more progress made in 2018–19 to ensure that all mine and quarry workers are protected equally from the hazards of mine dust lung diseases. The improvements to the way mineral mines and quarries report dust sampling is a good start, but there is a great deal of work still to be done.

I would like to commend the department on the way it has approached this challenge and the way it has worked in conjunction with the industry to find real workable solutions that protect people from harm. What has been achieved by the department in such a short period of time is remarkable.

Safety and health regulatory performance

In more broad terms, the department has also made significant improvements in its overall regulatory performance and it is impressive that these improvements have been made in parallel with the demands of responding

to the re-identification of mine dust lung diseases. In order to accommodate the significant changes to its operations and to the regulatory environment, the Resources Safety and Health division has begun a transformation from a more traditional compliance-style regulator into a more modern regulator that is more responsive to industry trends and emerging issues. While this transformation was largely brought on by the re-identification of coal workers' pneumoconiosis and the findings of the Minister's audit into compliance and enforcement policy and practices, Resources Safety and Health has proactively sought to reform and refocus its regulatory responsibilities to ensure it is able to adapt to changing industry conditions.

A number of legislative amendments have been advanced this year, including the Mines Legislation (Resources Safety) Amendment Bill, proposed amendments to the *Explosives Act 1999* that impacted on mining and quarrying, and the remaking of the coal mining and mining and quarrying Regulations. However, it was noted by the Queensland Parliament's Education, Employment and Small Business Committee and other stakeholders that there was a lack of consultation from Resources Safety and Health regarding these legislative changes. I encourage Resources Safety and Health to consult broadly with all tripartite stakeholders in any future legislative reviews.

While the number of mine inspections has largely remained in line with previous years, a stronger emphasis on mine audits means inspectors can conduct a more in-depth analysis of a mine operation's safety and health system and provide more valuable feedback regarding improvements. This type of co-operative approach is rooted in the tripartite regulatory model and plays a vital role in creating an environment where issues can be raised and responded to, as they emerge, for the protection of worker safety and health.

***"Those who cannot
remember the past are
condemned to repeat it."***

George Santayana

The benefits of this approach can be seen in the significant improvements in the safety performance of the industry this year, with substantial improvements in traditional safety indicators recorded across almost all areas of the industry.

The lost time injury frequency rate for 2017–18 was 2.8 injuries per million hours worked. This is a large improvement over the revised rate³ for 2016–17 of 3.4 injuries per million hours worked. This is an excellent turnaround and shows that the industry, in collaboration with the inspectorate and mine workers, is capable of driving the necessary improvements to keep workers safe.

I am also glad to see that there are moves underway to explore the greater use of lead indicators of performance rather than relying on the traditional lag indicators such as lost time injury frequency rates. While lost time injuries are a reliable way to measure safety performance, they are reactive in nature and gauge the effectiveness of safety and health measures *after the fact*. As such, they are not effective at preventing injuries or adverse incidents from occurring in the first place. In contrast, lead indicators of performance are proactive in nature and seek to predict and prevent adverse incidents before they happen. Although these lead indicators are much more difficult to track, they have the potential to significantly improve safety and health performance in the mining industry.

Structural reforms to the regulator

One of the key recommendations of the Coal Workers' Pneumoconiosis Select Committee's report was for significant structural reforms to be made to the regulator. In response to this recommendation, the Minister for Natural Resources, Mines and Energy established an independent project management office to consult with stakeholders and provide advice on alternative options for the structure of the regulator and its funding.

The project management office consulted with relevant stakeholders including industry, unions and other government stakeholders. The proposed models put forward by the project management office elicited a substantial amount of feedback. In response, an information paper was released in September 2018 which outlined additional components recommended by the project management office and a revised recommended regulator model.

I believe the establishment of an independent mine safety and health authority will provide an opportunity to remodel the regulator and ensure that it is dynamic and flexible enough to meet the fast-changing safety and health demands of the mining industry. However, it is vital that the final model takes into account the feedback from all stakeholders to ensure that the restructure delivers a regulator and governance model that has a well-defined role and responsibilities and has the necessary authority, accountability, expertise and oversight to keep mine workers safe and healthy.

It is important to remember that one of the key findings of the Royal Commission on the Pike River Coal Mine Tragedy was that the regulator lacked mining-specific expertise and this was one of the major contributing factors to the disaster. In fact, there are multiple inquiries into mining disasters from all over the world which have recommended that regulators involved in the governance of resource industries must have industry-related expertise⁴. Therefore, any changes to the Queensland model must ensure that the regulator maintains the high level of mining-specific expertise that currently exists and that this expertise is not diluted in any way.

³ Lost time injury frequency rate data for 2016–17 was revised upwards from a rate of 3.0 injuries per million hours worked as reported in the Queensland Mines and Quarries Safety Performance and Health Report 2016–17 to 3.4.

⁴ Courrières, France in 1906; British Royal Commission on Mines which reported in 1907, 1909 and 1911; Mt Mulligan in 1921; Moura no 2 in 1994; South African Commission of Inquiry into Safety and Health in the Mining Industry which reported in 1995; Queensland Ombudsman's Regulation of Mine Safety in Queensland Report from 2008.

Future challenges

This report outlines the considerable work that the department has completed in 2017–18 to protect the safety and health of mine workers in Queensland. However, the challenge now is for the industry to consolidate the results from the past 12 months and to continue to improve safety standards.

In 2018–19, I would like to see Resources Safety and Health focus on improving the general safety and health performance of the industry by continuing to:

- advance the shift to the use of a combination of lead and lag indicators of performance
- examine the impact of airborne contaminants including coal dust, respirable crystalline silica and diesel particulate matter
- complete its program of methane gas management audits at underground coal mines
- audit the quality of combustible dust sampling and analysis of roadway dust in underground coal mines
- progress a revision of the guidance note on fatigue risk management
- improve consultation with tripartite stakeholders and industry education regarding legislative reform.

I would also like to see the Occupational Health and Hygiene unit expand its focus from the implementation of the recommendations of the Monash review to a broader focus on the health of the mining and quarrying workforce.

As mining technology advances and the industry takes advantage of better and safer systems and machinery, I believe it is more than capable of achieving improved results. However, in order to keep making progress, the industry needs to learn the lessons of the past and ensure the improvements that were made as a result of past mistakes are not forgotten and are, in fact, reinforced throughout the industry.

Next year will mark the 25th anniversary of the Moura number 2 disaster, which was the last major mining disaster to occur in Queensland. One of my biggest concerns is that there is now a whole generation of mine workers who have never lived through a major mining disaster and there is a risk that the hard lessons learned may be forgotten.

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.

INDUSTRY OVERVIEW

Mining is a dynamic industry. As the technology and techniques of mining evolve, so do the hazards, and older and existing hazards continue to pose a risk to mine workers. This challenging environment requires mine safety and health systems to continually improve so that the existing and emerging risks to workers are minimised and everyone involved in the industry goes home safe and healthy at the end of each day.

The Queensland Mines Inspectorate works with mine operators and unions in a tripartite partnership to identify these existing and emerging risks, and to implement appropriate measures to reduce the hazards involved.

Over the past few decades, mine safety has advanced at a dramatic rate. However, mine workers continue to be killed or injured as a result of serious accidents, and continue to be involved in high potential incidents that result in, or have the potential for, serious adverse outcomes.

In 2017–18, one mine worker lost his life while working in a Queensland mine—this is one too many.

The industry also reported incidents which resulted in people suffering:

- 30 permanent incapacities
- 455 disabling injuries
- 2164 high potential incidents
- 292 lost time injuries.

Although the longer term trend has seen the number of injuries and the time lost to those injuries decline, in recent times there has been a plateauing of improvements in the measures used to compare safety across the industry.

Encouragingly, in Queensland in 2017–18, the rate of lost time injuries fell to 2.8 injuries per million hours worked. This was a sharp reduction compared to the 3.4 injuries per million hours worked that was recorded in 2016–17⁵.

⁵ Lost time injury frequency rate data for 2016–17 was revised upwards from a rate of 3.0 injuries per million hours worked as reported in the Queensland Mines and Quarries Safety Performance and Health Report 2016–17 to 3.4.

CASE STUDY

COAL MINE WORKER FATALLY INJURED PERFORMING MAINTENANCE ON A LARGE EXCAVATOR BUCKET

A coal mine worker at a Central Queensland coal mine was fatally injured while carrying out repairs on a large excavator bucket.

The worker was using an air carbon arc gouging process to remove an external wear plate from an excavator bucket. The plate unexpectedly sprang up and struck the worker, fatally injuring him.

The hazard of elastic springback is not limited to excavator buckets, for example:

- In two similar but separate incidents, workers were struck while removing indented sections near the rim of rear dump truck trays.

- Violent elastic springback was observed during the removal of an under-tub wear plate from a dragline. The plate had probably been indented when the dragline was walked over an uneven surface.
- A worker was hit while removing a wear liner plate (push pad) from a dozer blade.

As a result of the investigation into the fatality, the inspectorate issued a mine safety bulletin about elastic springback in plates on equipment which contained detailed advice about the causes of such incidents and nine recommendations for reducing risk associated with performing similar maintenance work.

Table 1: Numbers and rates of incidents in 2017–18 compared to 2016–17 *

ALL MINE TYPES					
	2017–18		2016–17		
Number of lost time injuries	292		309		
Lost time injury frequency rate	2.8		3.4		
Fatalities	1		2		
Number of high potential incidents	2164		1888		
High potential incident frequency rate	20.7		20.7		
COAL MINES			MINERAL MINES AND QUARRIES		
	2017–18	2016–17		2017–18	2016–17
Number of lost time injuries	227	234	Number of lost time injuries	65	75
Lost time injury frequency rate	3.2	3.6	Lost time injury frequency rate	1.5	2.1
Fatalities	1	1	Fatalities	0	1
Number of high potential incidents	1776	1544	Number of high potential incidents	388	344
High potential incident frequency rate	25.0	24.1	High potential incident frequency rate	11.6	12.7

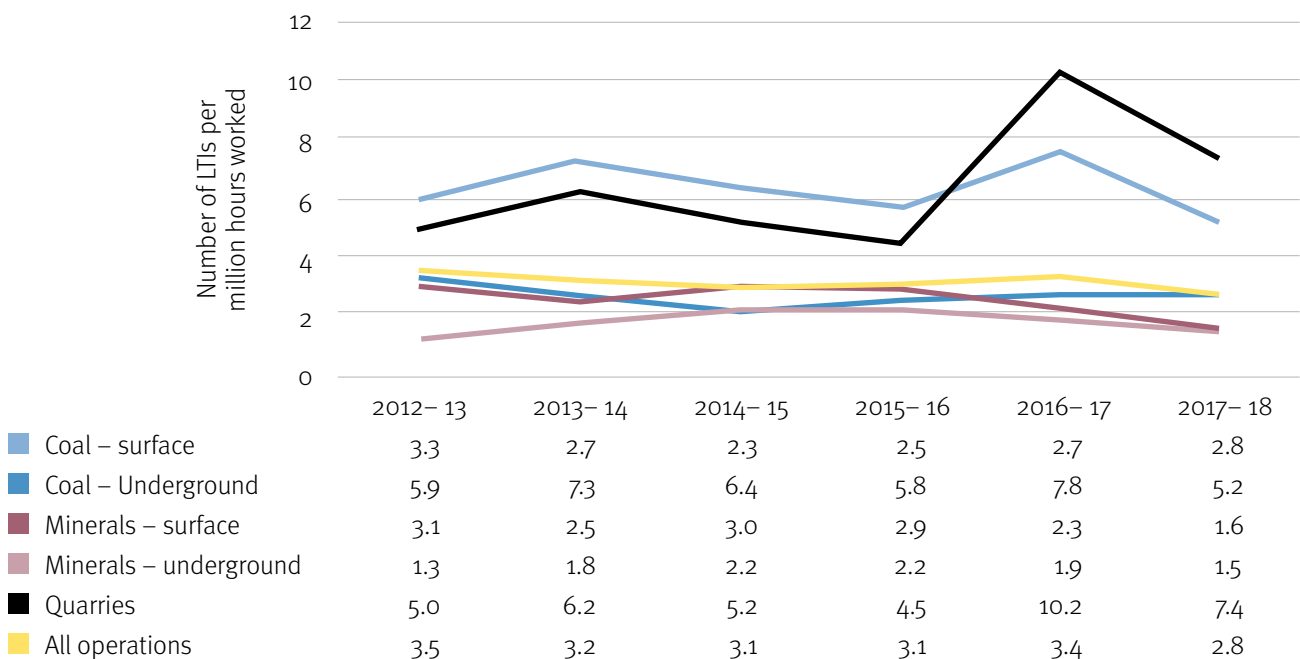


Figure 1: Lost time injury frequency rate, 2012–2018

* This table has been amended. Please refer to attached erratum.

In terms of high potential incidents, the industry recorded the same rate in 2017–18 as it did in 2016–17. However, the long-term trend shows a gradual rise in the rate of high potential incidents across all areas of the industry.

The circumstances of many lost time and high potential incidents showed:

- a number of high potential incidents could have resulted in fatalities
- a number of incidents occurred during activities with a known risk with identified controls—however controls were not implemented
- there is a reliance on low-order controls
- previous warnings were missed
- complacency in following safety and health systems
- inadequate levels of supervision.

This juxtaposition in the rate of lost time injuries and high potential incidents appears to indicate that, while the industry is getting better at reducing the number of injuries that result, the number of incidents which have the potential to cause harm are still occurring at a similar or an increased rate.

The challenge now for the industry is to find a way to consolidate the improvements in the rate of injuries while continuing to drive initiatives that reduce the hazards that cause incidents in the first place.

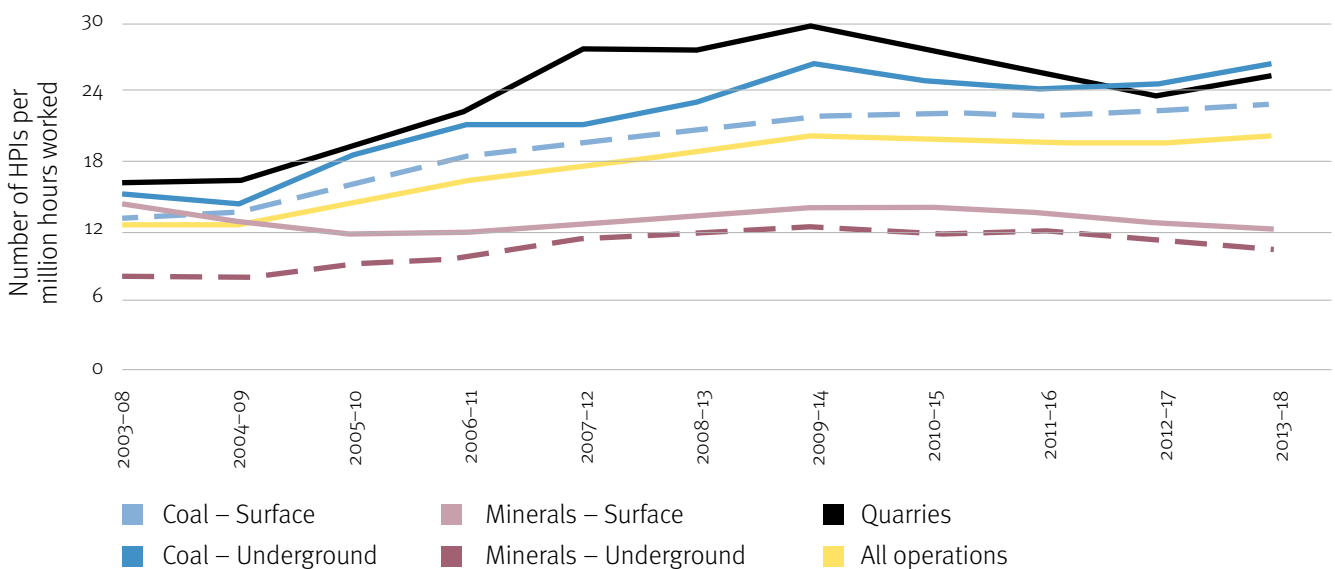


Figure 2: High potential incident frequency rate five-year rolling average, 2003–2018

CASE STUDY

ARTICULATED TRUCK ROLLOVERS



On average, an articulated dump truck/water truck rollover occurs every two months on a Queensland mine or quarry site. Of the 64 incidents reported since 2006:

- 37 per cent occurred while vehicles were reversing—riding up over uneven ground or stockpiles
- 35 per cent occurred while vehicles were turning—speed, downhill, reverse cambers and wet surfaces



- 22 per cent occurred while vehicles were travelling—operator loss of control
- 6 per cent occurred on sloping ground.

While the truck cabin remained upright in 92 per cent of the rollover incidents, machine operators have sustained injuries—some serious—in 6 per cent of these incidents.

COAL WORKERS' PNEUMOCONIOSIS SELECT COMMITTEE

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, of which, 58 were to be actioned by the Department of Natural Resources, Mines and Energy. As well as supporting the 18 recommendations made by the Monash University Centre for Occupational and Environmental Health review, the report recommended structural changes for the regulator and the formation of an independent mine safety and health authority.

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.

Specifically, in relation to the issue of structural changes to the regulator, the Queensland Government committed to establishing the 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 via two discussion papers and a number of face-to-face forums. The first discussion paper sought feedback from 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 both 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 a consultation period has been provided to afford stakeholders the opportunity to provide further feedback. Stakeholder comments will be considered by the Queensland Government in deciding a final regulator model for resources safety and health in Queensland.

PERFORMANCE OF THE 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 inspectors 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 two 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 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.



Figure 3: Phil Casey, Russell Albury, Hemann Fasching, Greg Manthey from the Queensland Mines Inspectorate at the Queensland Mining Industry Health and Safety Conference

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.

The inspectorate—or in the case of prosecutions, the Commissioner for Mine Safety and Health or the chief executive (Director-General) or delegate—determines the most appropriate course of action on a case-by-case basis.

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

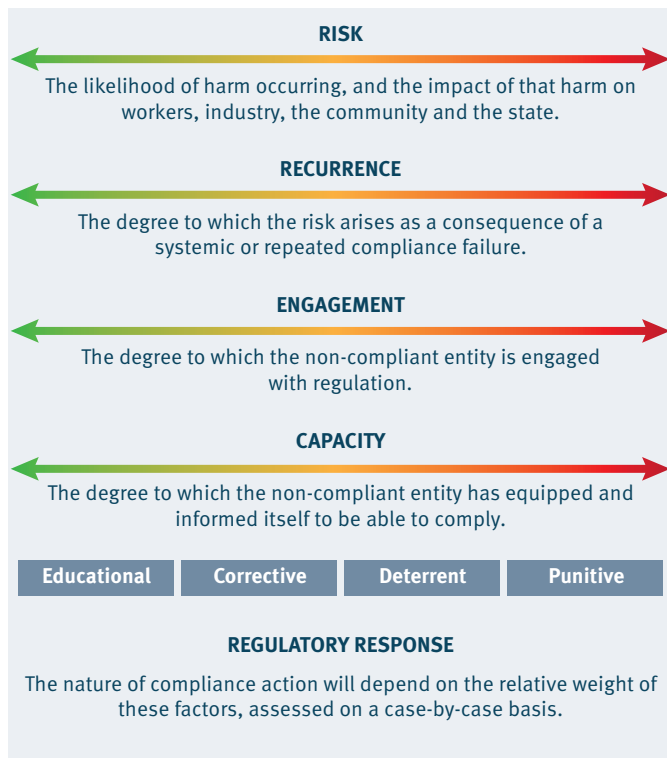


Figure 4: Factors considered when making a decision regarding regulatory action⁶

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.

In 2017–18, the inspectorate conducted 1376 mine inspections, 65 audits and 86 investigations, and received 107 complaints. The inspectorate also issued 864 substandard conditions or practice notices, 450 directives, 10 safety alerts and 9 safety bulletins, and held 29 compliance meetings (tables 2–9).

The reduction in the number of inspections over the past three years is due to an increased focus on conducting mine audits, which 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.

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

CASE STUDY

TRUCK DRIVEN FROM GO-LINE WITH TURBO TIMER ACTIVATED



An off-highway truck at a Queensland mine skidded for more than 50 metres on a haul road, coming to a stop with a front wheel on top of a bund.

The incident occurred after an operator entered the vehicle cabin and drove the truck from the go-line while the vehicle was in shutdown mode with the turbo timer activated. While the truck was being driven, the turbo timer shut the engine down when it timed out, resulting in the park brakes activating. There was no secondary steering available because the ignition switch was in the OFF position.

This incident happened because the aftermarket turbo timer fitted to the vehicle was not able to be linked to the application of the park brake to shut down the engine if the park brake was released.

The inspectorate issued a mine safety alert and recommended that mine sites should check trucks fitted with aftermarket turbo timers to see whether or not they can be driven while the turbo timer is activated.

The inspectorate also recommended that sites should consider whether hazard controls should be installed such as:

- fitting a visual alarm that shows the truck is in turbo timer mode
- arranging for the engine to be immediately shut down if the park brake is released when the turbo timer is active.

No injuries occurred as a result of the incident.

Mine inspections

Table 2: Mine inspections conducted in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	390	411	429
Mineral mines and quarries	986	1048	1168
TOTAL	1376	1459	1597

Mine audits

Table 3: Mine audits conducted in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	42	10	4
Mineral mines and quarries	23	42	28
TOTAL	65	52	32

Investigations

Table 4: Investigations conducted in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	45	41	65
Mineral mines and quarries	41	53	36
TOTAL	86	94	101

Complaints received

Table 5: Complaints received in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	54	43	67
Mineral mines and quarries	49	57	54
Other—no mine involved	4	0	0
TOTAL	107	100	121

Substandard conditions or practice notices

Table 6: Substandard conditions or practice notices issued in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	241	278	243
Mineral mines and quarries	623	810	758
TOTAL	864	1088	1001

Directives

Table 7: Directives issued in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	147	130	149
Mineral mines and quarries	303	327	185
TOTAL	450	457	334

Compliance action

Table 8: Compliance action in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	26	10	22
Mineral mines and quarries	3	9	9
TOTAL	29	19	31

Suspended operations

Table 9: Number of operations suspended in 2017–18 (compared to 2015–16 and 2016–17)

	2017–18	2016–17	2015–16
Coal mines	25	12	13
Mineral mines and quarries	67	63	43
TOTAL	92	75	56

Safety alerts

In 2017–18, the inspectorate issued 10 safety alerts on a range of issues. This is compared to 15 in 2016–17 and 10 in 2015–16.

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

Safety bulletins

In 2017–18, the inspectorate issued nine safety bulletins on a range of issues. This is compared to nine in 2016–17 and three in 2015–16.

Safety bulletins are short reports that provide general advice on safety and health best practice at mines and quarries in relation to specific topics. They are issued to all mines and quarries 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.

While anecdotal evidence suggests the proportion of unannounced inspections in other high hazard industries is around 10–20 per cent, Resources Safety and Health will conduct a review in 2018–19 to determine the appropriate level of unannounced inspections for the Queensland mining industry.

Lead indicators of performance

Traditionally, the industry has used the rate of injuries that occur as a way to measure safety performance. These measures are what is referred to as a lag indicator. Lag indicators are reactive in nature and measure the effectiveness of safety and health measures *after the fact*. As such, they are not effective at preventing injuries or adverse incidents from occurring.

In contrast, measures that are proactive in nature and seek to predict and prevent adverse incidents before they happen are referred to as lead indicators. These lead indicators are more difficult to track, but have the potential to significantly improve safety and health performance in the mining industry.

In 2017–18, the inspectorate has worked in cooperation with the industry to explore the use of lead indicators of performance. Further work will occur in 2018–19 to explore measures which can be used by industry and the inspectorate as effective lead indicators.

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 2017–18, there were eight on-going prosecutions before the courts involving 17 defendants. Three of these prosecutions were finalised during this period. One additional prosecution was commenced against four defendants.

Examples of the prosecutions, including one case relating to a fatality, are outlined below.

Fatality at a coal mine in Central Queensland

On 6 February 2015, an incident occurred at a coal mine in Central Queensland in which a coal mine worker was fatally injured and another suffered grievous bodily harm after they were hit with tyre components when a tyre exploded. The injured person and the deceased had been in the process of changing one of the tyres on a water truck at the time of the incident.

One defendant, a contracting company at the mine, entered a plea of guilty to the charges and was sentenced at the Rockhampton Industrial Magistrates Court on 25 August 2017. The company was fined \$150,000 and ordered to pay costs to the department of \$149,000. A conviction was not recorded.

The prosecution that had been commenced against the individual who had been supervising the activity at the time of the incident was discontinued.

Shot-firer training at a coal mine in Central Queensland

On 22 June 2014, shot-firer training was being conducted by an individual at a coal mine in Central Queensland. The training that was provided involved a number of breaches, including failing to report a misfire and failing to store explosives in a secured area. However, the incident did not result in any injuries or damage to property.

One defendant, the shot-firer, entered pleas of guilty to a number of the charges and the remaining charges were listed for trial. The defendant was convicted of one of the offences that proceeded to trial and acquitted in relation to the other offences. The defendant was fined \$7200 and ordered to pay costs amounting to \$9374.15.

The charges were discontinued against the other defendant, the underground mine manager.

Review of compliance and enforcement functions

In June 2017, as part of an ongoing commitment to continuous improvement, the Commissioner for Mine Safety and Health commenced an independent review of the compliance and enforcement functions of the mines, petroleum and gas, and explosives inspectorates. The objective of the review was to understand where improvements could be made to governance and administrative functions to improve compliance and enforcement.

The Commissioner's review was initiated at the Minister's request after an internal review of statutory appointments and delegations in Resources Safety and Health. The internal review identified a number of areas for improvement and those improvements were implemented in March 2017, including amendments to the suite of mining safety and health legislation to provide clarity about the appointment

of office holders, the powers they can exercise, and the information they can collect under the mining, petroleum and gas, and explosives safety legislation.

The Commissioner engaged an independent external consultancy to conduct the review, focusing on statutory appointments and delegations, compliance and enforcement policy and practices, and skills and competency.

As the Commissioner's powers to review do not include the power to compel or require the production of, or access to, documentation or files or attendance at interviews, the review was conducted with the support and cooperation of the Director-General.

The review was completed in August 2017 and found that compliance and enforcement policies and practices were broadly in accordance with the legislation and exhibited many areas of good practice. However, the report identified areas that could be improved to ensure the approach of Resources Safety and Health could keep pace with the roles and expectations of a modern regulator.

The review identified a need to more clearly define and improve:

- the compliance monitoring and enforcement strategy
- the documentation and governance of key decisions
- the processes and controls relating to the exercise of operational and regulatory discretion to ensure that such decisions are appropriately robust and transparent
- the governance and decision making related to investigations and prosecutions.

In November 2017, Resources Safety and Health published a new compliance policy which covers the mines, petroleum and gas, and explosives directorates. The policy took into account the recommendations of the review and outlined the inspectorates' compliance approach and principles—including identification of appropriate regulatory responses—and the range of compliance tools available.

Regulatory framework amendments

In 2017–18, the inspectorate progressed a number of legislative amendments to the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*. These amendments were intended to introduce additional safety and health measures to protect Queensland mine workers and to support the implementation of recommendations of the Monash review.

Mines Legislation (Resources Safety) Amendment Bill

The Mines Legislation (Resources Safety) Amendment Bill 2017 was introduced to the Queensland Parliament on 7 September 2017 and addressed 15 matters identified for immediate improvement in the resources safety and health regulatory framework. The Bill also provided for greater transparency and accountability, improvements to safety and health management systems, and stronger enforcement and compliance powers in relation to:

- ventilation officer competencies
- inspector powers including inspector workplace entry
- manufacturer, supplier, designer and importer notification requirements
- contractor and service provider management
- advisory committees and Board of Examiners membership
- safety and health management system requirements
- the register to be kept by the Board of Examiners
- health surveillance
- notification of diseases
- release of information
- penalties
- officer obligations
- continuing professional development
- suspension or cancellation of certificates of competency and site senior executive notices
- civil penalties.

Passage of this Bill was interrupted by the announcement of the 2017 Queensland state election and a revised Bill was introduced to the Queensland Parliament by the Hon Dr Anthony Lynham, Minister for Natural Resources, Mines and Energy on 20 March 2018.

Although the Queensland Parliament's Education, Employment and Small Business Committee recommended the Bill, the committee noted concerns raised by stakeholders about the lack of consultation on both the 2017 and 2018 Bills. The committee recommended that the department should consult more widely with all relevant mining industry stakeholders before Bills are introduced into the Legislative Assembly.

It should be noted that the revised 2018 Bill did contain changes that were made due to consultation, however, a review of the legislation can only be successful through tripartite consultation and discussion.

As at 30 June 2018, the Mines Legislation (Resources Safety) Amendment Bill 2018 was under consideration by the Queensland Parliament.

Amendments to Coal Mining Safety and Health Regulation 2017

In April 2018, the Department of Natural Resources, Mines and Energy released proposed amendments to the Coal Mining Safety and Health Regulation 2017 for feedback. These amendments were to sustain and enhance the improvements delivered in implementing the Monash review.

These changes included:

- the inclusion of health surveillance as a purpose of the Coal Mine Workers' Health Scheme
- enabling health surveillance, including by allowing the release of identified data for research purposes if approved by an ethics committee
- increasing the minimum frequency of chest X-ray and spirometry examinations to at least once every five years for aboveground workers.

Following consultation, the inspectorate progressed the Coal Mining Safety and Health (Coal Workers' Pneumoconiosis) Amendment Regulation 2018. This Regulation became effective on 20 July 2018.

Mineral mines and quarries

In 2017–18, the inspectorate’s primary focus for mineral mines and quarries was on reducing instances of falls and collision hazards and on implementing strategies to reduce the hazards posed by respirable crystalline silica.

Table 10: Mineral mines and quarries compliance targets 2017–18

TARGET	ACHIEVED/NOT ACHIEVED
AUDITS AND INSPECTIONS	
Undertake 980 mineral mines and quarries inspections	Achieved
Undertake 6 mine safety and health management system audits	Achieved
Undertake 30 structured inspections of mineral mines and quarries for respirable crystalline silica management	Achieved
STAKEHOLDER ENGAGEMENT	
Deliver 5 quarry safety and health seminars (Cairns, Townsville, Rockhampton, Mackay and Brisbane)	Partially achieved NOTE: Due to changes within the Institute of Quarrying Australia, the Cairns and Mackay seminars were cancelled and the Rockhampton seminar was rescheduled to the 2018–19 financial year.
Hold 1 underground mine managers forum	Achieved
Publish guidance material:	
<ul style="list-style-type: none"> management of Respirable Crystalline Silica monitoring and health surveillance guideline 	Achieved
<ul style="list-style-type: none"> collisions guidance note. 	Achieved

During the year, the inspectorate undertook 986 inspections and 23 audits compared with 1048 inspections and 42 audits in 2016–17. The inspectorate achieved, or came substantially close to achieving, all of its targets for mineral mines and quarries for the year.

The compliance focus for the inspectorate was based on the prevalence of the identified hazards at an individual site and the site’s demonstrated ability to manage risk to an acceptable level. In developing its compliance program, the inspectorate analysed data from reported incidents in Queensland and other relevant mining jurisdictions, as well as information gathered from observations during inspections and audits.

Management of respirable crystalline silica

A significant achievement for the inspectorate was the publishing of the new Queensland guideline *QGLo2 Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries*.

The guideline prescribes the medical assessment requirements for health surveillance, minimum sample numbers and periodic exposure monitoring to quantify worker exposure, and directs mines to investigate and eliminate overexposure to respirable crystalline silica and minimise exceedances.

Inclusion of mineral mines and quarries in the respirable dust database

In support of the guideline for the management of respirable crystalline silica, the inspectorate commenced the establishment a respirable dust database to manage data from more than 1600 mineral mines and quarries in Queensland.

Prevention of falls and collisions

In December 2017, the inspectorate published guidance notes on fall prevention and collision prevention. The guidance note on fall prevention was designed to help mine workers identify fall hazards and select effective controls to minimise the risk of injury and death from fall-related incidents and accidents. The guidance note on collision prevention was designed to assist in the identification of hazards, and the development and implementation of controls, to manage the risk to people from collisions.

Other guidance notes and activities

In 2017–18, the inspectorate published guidance notes on shaft construction and surface storage facility (tailings dam) management.

The three-part guidance note on shaft construction provides information to mineral mining operations on how to systematically manage shaft construction risks to ensure compliance with the legislative framework. It seeks to eliminate or minimise risks associated with shaft sinking winders, winding systems, and associated shaft sink processes and practices.

The surface storage facility management guidance note summarises and provides information to mine management on basic risk-based precautions and concepts to ensure the safety of tailings storage facilities for surface mine sites. It does not offer advice on tailings disposal or placement into underground mines.

The inspectorate also developed online competency training modules for mines with less than five people and implemented an inspectorate dashboard for reporting accidents and incidents.

CASE STUDY

FRONT WHEELS OF INTEGRATED TOOL CARRIER LIFTED OFF GROUND DURING BOOM EMERGENCY LOWERING



A maintenance worker at a Queensland mine was operating a ground controlled after-market manual emergency lowering system to lower the boom of an integrated tool carrier onto a stand when the front wheels lifted off the ground and the whole machine tilted over towards the worker. The stand then skidded sideways allowing the integrated tool carrier to come back down onto its wheels.

Although the worker was not injured, the consequences of this incident could have been serious.

The inspectorate recommended that when after-market items of plant are added to a host machine, mines must complete a risk assessment to ensure that new hazards are identified, assessed and effectively controlled and that existing controls are re-evaluated.

It was also recommended that risk assessments should be conducted on all after-market emergency lowering systems to ensure that no unplanned movement can occur. A further recommendation was that, whenever practical, mines should not install different subsystems within a fleet of otherwise identical plant to avoid introducing greater complexity to maintenance and training regimes.

Coal mines

In 2017–18, the inspectorate's primary focus for coal mines was on the management of methane gas at underground coal mines, the control of respirable coal dust and silica, and on lifting and slinging activities and supervision.

Table 11: Coal mines compliance targets 2017–18

TARGET	ACHIEVED/NOT ACHIEVED
AUDITS AND INSPECTIONS	
Undertake 400 coal mines inspections	Partially achieved NOTE: The inspectorate undertook 390 coal mines inspections.
Undertake 82 coal mine safety and health management system principal hazard audits	Not achieved NOTE: The inspectorate rescheduled a significant proportion of this compliance activity to commence with a new structured audit guide.
STAKEHOLDER ENGAGEMENT	
Hold 1 industry mine leaders forum (mine operators and site senior executives)	Achieved
Hold 1 open-cut mine managers forum (open-cut managers and site senior executives)	Not achieved
Hold 1 underground mine managers forum	Achieved NOTE: Underground mine managers forum was postponed to 18 July 2018.
Hold 4 explosion risk zone controllers forums	Achieved NOTE: The inspectorate held six forums.
Hold 2 ventilation officers forums	Achieved
Hold 2 electrical engineering managers forums	Achieved
Hold 2 mechanical engineering managers forums	Achieved
Hold 2 site safety and health representatives forums	Partially achieved
Hold annual Queensland Mining Industry Health and Safety Conference	Achieved
Participate in Australian Standards working group meetings	Achieved NOTE: The inspectorate participated in 23 Australian Standards working group meetings.
Run 3 Board of Examiners roadshows	Achieved NOTE: The inspectorate held an additional workshop for coal oral examination panels in Mackay.
Hold 4 recognised standards meetings	Achieved
Hold 2 diesel particulate matter meetings	Partially achieved

TARGET	ACHIEVED/NOT ACHIEVED
SHARE INFORMATION AND KNOWLEDGE TO REDUCE RISK	
Safety alerts posted within 20 business days of an incident occurring	Achieved
Develop the following recognised standards:	
<ul style="list-style-type: none"> sealing management 	Partially achieved NOTE: Consultation with relevant industry experts completed to develop scope.
<ul style="list-style-type: none"> risk management 	Not achieved NOTE: The inspectorate planned to review the existing risk management recognised standard. Although this review did not progress, the existing recognised standard is sound.
<ul style="list-style-type: none"> management structures 	Partially achieved NOTE: Subcommittee formed and scope has been developed.
<ul style="list-style-type: none"> polymeric chemicals. 	Partially achieved NOTE: Draft document completed and distributed to industry for feedback.

The inspectorate undertook investigations into incidents and serious complaints as well as a program of compliance audits. During the year, the inspectorate conducted 390 inspections and 42 audits of coal mines compared with 411 inspections and 10 audits in 2016–17. This increase in the number of audits reflects a deliberately enlarged program of major audits of the controls, systems and process at mine sites to manage ventilation and respirable dust.

As outlined below, a significant number of the inspectorate’s resources were occupied in the management of methane in Queensland coal mines. This deep dive has caused significant interruption to the regular compliance activity of the inspectorate and explains the progress against its stated compliance targets for coal mines for the year.

Management of methane gas in Queensland coal mines

At the 2017 Queensland Mines Inspectorate industry safety and health briefing, the Chief Inspector of Mines (Coal) informed coal mining industry leaders that the inspectorate would be focussing on the management of methane gas at underground coal mines in the first half of 2018. This focus was prompted after a number of operations had reported a series of incidents relating to methane gas.

Methane is a naturally occurring gas in coal seams which is colourless, non-toxic and has no odour in its pure state. Methane is the major component of natural gas and is found in varying levels in most coal and shale deposits. Due to its common occurrence in significant quantities in many Queensland coal mines, methane is one of the most dangerous of the flammable gases encountered.

Methane concentrations in the range of 5.0–15.4 per cent are flammable and can cause catastrophic explosions. The inspectorate records exceedances of methane that are greater than 2.5 per cent as high potential incidents and coal mines must have a principal hazard management plan for gas management.

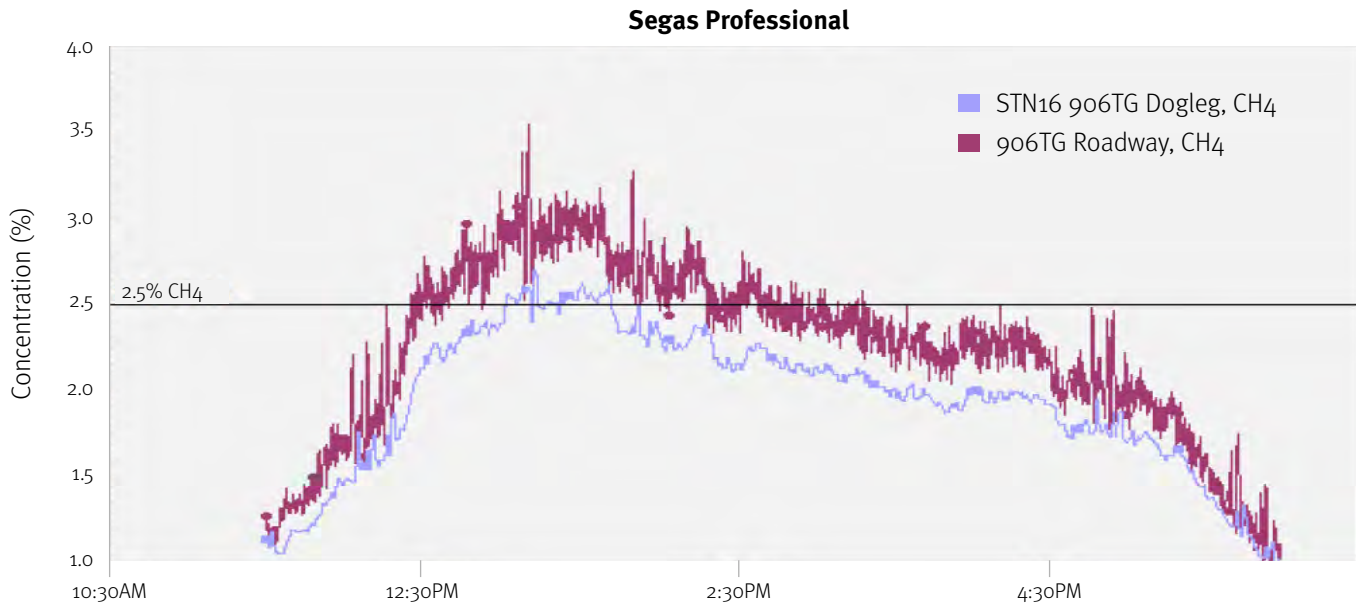


Figure 5: Gas monitoring data showing a methane exceedance event

Between January and October 2017, the inspectorate recorded 41 methane exceedance events greater than 2.5 per cent in Queensland underground coal mines and there were instances where tube bundle data showed methane exceeding 5.0 per cent. In this period, one mine recorded 165 individual peaks of methane in the longwall tailgate exceeding 2.5 per cent.

In response, the inspectorate conducted a substantial program of gas management audits of the controls, systems and process at seven of the ten operating underground coal mines in Queensland, with the remaining sites scheduled for audit in 2018–19.

The inspectorate worked with coal mines to address identified deficiencies and improvement opportunities, including the requirements of compliance directives. An example of the kinds of directives issued was a suspension of longwall cutting operations after ventilation changes resulted in methane readings above 5.0 per cent.

In addition, the inspectorate conducted six workshops for explosion risk zone controllers which achieved strong participation from industry. The forums addressed a number of hazards in underground coal mines including methane gas and the explosion risk it presents.

Management of tyres and rims

In 2016–17, as a result of recommendations from the Coroners Court of Queensland, the inspectorate implemented a new recognised standard to assist industry with managing the hazards posed by tyres, wheels and rims. *Recognised standard 13: Tyre, wheel and rim management*, came into effect in January 2017.

In 2017–18, the inspectorate completed work on its incident reporting processes to better capture data related to incidents with tyres, wheels and rims. This included the addition of two new reporting categories to better classify incidents that occur. This work will allow the inspectorate to better analyse and report on incidents involving tyres, wheels and rims and to assess the effectiveness of the new recognised standard in reducing the risk to mine workers.

CASE STUDY

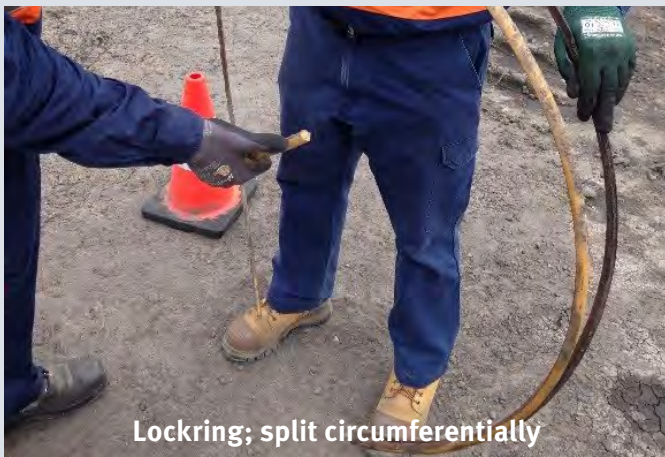
CIRCUMFERENTIAL FAILURE OF LOCKRINGS



General scene



Position 1 tyre-and-rim assembly



Lockring; split circumferentially



Close-up of split locking

A circumferential locking on a Caterpillar 992C front end loader at a Queensland coal mine failed catastrophically after a new O-ring had been fitted to the position 1 tyre-and-rim assembly. This resulted in parts being propelled up to 50 metres from the vehicle.

Although no injuries occurred, there was considerable potential for a serious injury or fatality.

An industry-led investigation occurred involving:

- the owner
- the original equipment manufacturer and their local distribution agent
- University of Queensland Materials Performance
- Queensland Mines Inspectorate.

A broad scope investigation was performed and highlighted both metallurgical and mechanical issues.

Although no injuries occurred, the matter was considered significant because, in recent years, tyres, wheels and rims have been involved in more mining fatalities than any other single contributing factor. Various failure mechanisms have occurred and have been studied over time.

As a result of the investigation, a number of short, medium and long-term recommendations were made to the industry in order to reduce risk to mine workers.



Diesel particulate in underground coal mines

In 2017–18, the inspectorate worked with underground coal mines to proactively address the challenges associated with exposure to diesel particulate matter.

In January 2017, the inspectorate contacted all underground coal mines to request personal diesel particulate matter exposure data. More than 7300 valid samples dating back to 2002 were provided and the inspectorate incorporated this data into the online dust database. Data was supplied by mines on a voluntary basis.

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*. A coal-specific guidance note incorporating the latest Australian Institute of Occupational Hygienists advice is currently under development and is expected to be published in 2018–19.

Data analysis showed that Queensland’s coal mines have generally operated within the adopted occupational exposure limit, with some mines occasionally recording mean exposure results which exceeded prescribed limits.

This increased focus on diesel particulate matter by the inspectorate and industry has resulted in improved outcomes for mine workers. Since 2015, there has been a gradual decrease in average diesel particulate matter concentrations

and, in 2017, all underground coal mines in Queensland recorded average concentrations of less than 0.06 mg/m³, which is significantly lower than the shift adjusted occupational exposure limit of 0.09 mg/m³. In addition, the percentage of samples which have exceeded the adopted limit have also decreased with only four per cent of samples in 2017 exceeding the adopted limit as compared to 12 per cent recorded in 2016.

Longwall moves represented the highest risk to workers and the inspectorate has continued to address the number of exceedances in the longwall move similar exposure group (which accounted for 46 per cent of exceedances) by implementing a structured inspection program focussed on diesel exhaust management.

In December 2017, the inspectorate facilitated a diesel emissions forum in Moranbah which included representatives from all operating underground coal mines, the inspectorate and suppliers of diesel equipment to the industry.

In early 2018, the inspectorate conducted structured inspections at all underground coal mines focussing on diesel exhaust management, with particular attention on addressing longwall moves. Site reviews of diesel emissions management plans and their implementation status at all operating underground coal mines were also completed. The reviews enabled the inspectorate to identify areas of best practice and to communicate opportunities for improvement.

The inspectorate also developed a fact sheet to assist underground coal mines with understanding the effects of exposure to diesel particulate matter and to help control exposure.

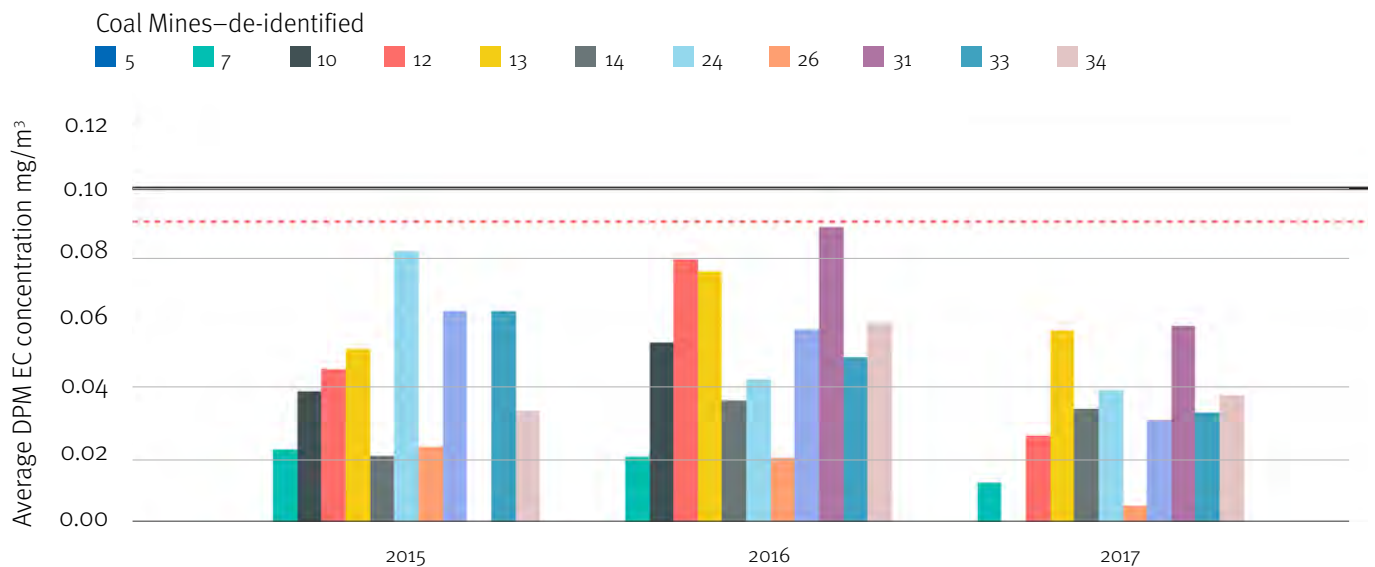


Figure 6: Average diesel particulate matter concentrations in underground coal mines 2015–2017

Mining industry drug and alcohol surveys

The abuse of alcohol and illicit and prescription drugs is a major concern for Queensland's mining industry. Their use can impair judgement and performance and amplify the inherent risks involved in mining, putting users and other workers at serious risk of harm.

In 2017–18, Resources Safety and Health conducted drug and alcohol surveys of operators in both the coal mining and mineral mining and quarrying industries across Queensland.

The surveys aimed to determine:

- the amount and type of testing being conducted on sites
- the amount and types of positive tests occurring on sites
- trends in the mining industry regarding where positive tests were occurring.

The surveys included coal mines, coal handling preparation plants and exploration sites, and mineral mines and quarries, and covered workplaces which employ more than 38,000 people including full time and casual employees.

The survey results showed that the industry conducts a considerable volume of drug and alcohol testing with sites using a mixture of random testing, testing under suspicion (causal) and mandatory testing post-accident or incident.

Overall, the number of positive tests for drugs was extremely low in both coal and mineral mines and quarries with only 0.74 per cent of drug tests conducted in coal mines returning a positive reading and only 0.02 per cent of alcohol tests. Similarly, in mineral mines and quarries, only 1.26 per cent of drugs tests returned a positive reading and only 0.04 per cent of alcohol tests.

The surveys showed that workers employed on a casual basis and those living in mining camps were more likely to test positive for drugs. In coal mines, the incidence rate of positive drug tests was highest among casual workers (2.2 per cent) and lowest among permanent employees (0.6 per cent). When it came to accommodation type, workers living in mining camps were more likely to test positive, with residential workers least likely.

Further surveys are planned for 2018–19 and will be used to inform regulatory efforts and strategies.

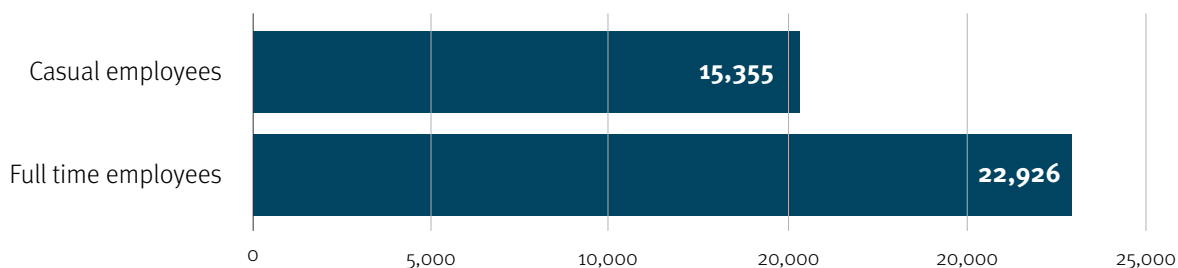


Figure 7: Number of workers covered by drug and alcohol surveys, coal and mineral mines and quarries

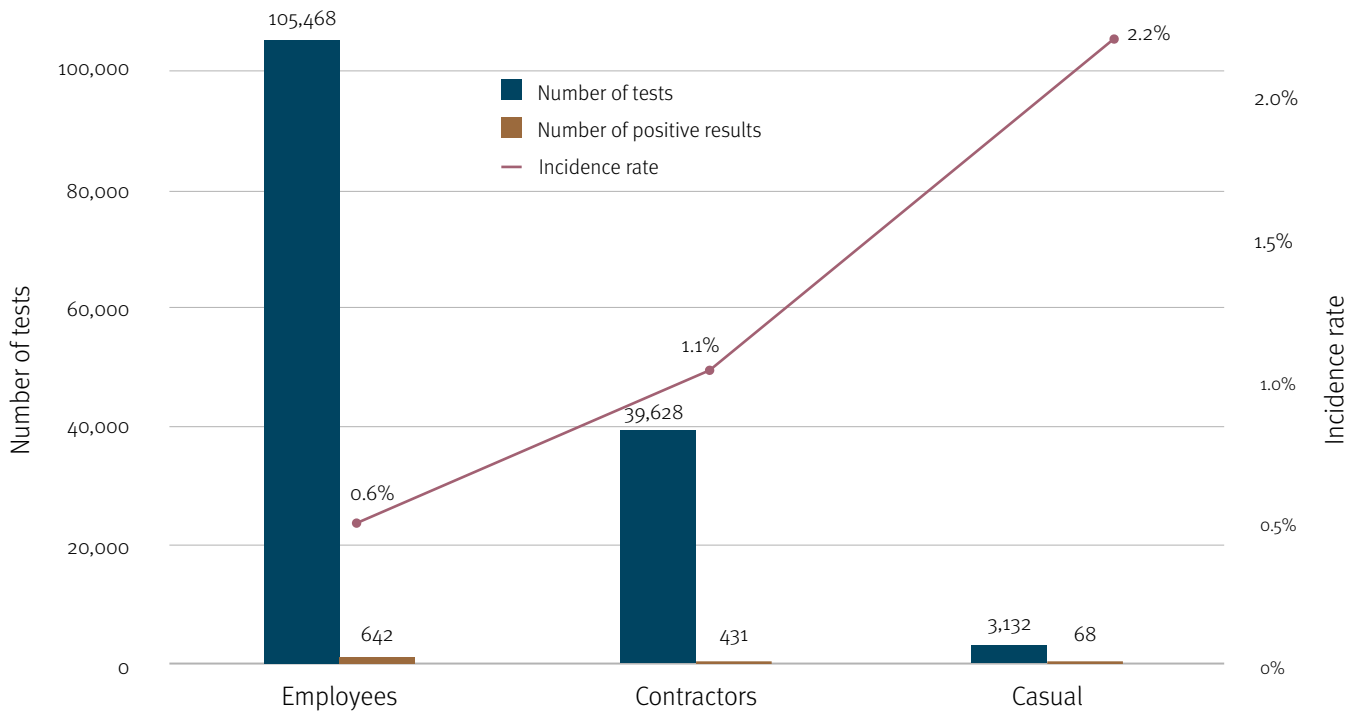


Figure 8: Number of positive drug results in coal mines grouped by employment category

Natural cause deaths

In 2017–18, three non-occupational related deaths occurred at Queensland mine sites.

While these occurrences are rare, the inspectorate is committed to collecting and analysing data on natural cause deaths to understand if there is a higher prevalence than in the broader community.

The inspectorate will conduct further research in 2018–19.

From the Commissioner

The commissioner expresses her sympathies to the families, friends and colleagues of all mine and quarry workers who passed away while at work.

Table 12: Natural case deaths at Queensland mines 2017–18

DATE	LOCATION	SECTOR	CAUSE OF DEATH
13 May 2018	Curragh mine—Banksia camp	Coal	Natural causes (suspected heart attack)
1 April 2018	Amrun mine—Village camp	MMQ	Natural causes (unspecified)
1 January 2018	Mount Isa mine—Admin building	MMQ	Natural causes (heart disease)

Mine emergency exercises

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 2017–18, the level 1 mine emergency exercise was held on 21 November 2017 at Broadmeadow mine near Moranbah in Central Queensland. Broadmeadow underground mine is a top coal cave longwall punch mine located approximately 30 kilometres north east of Moranbah. This was the 20th level 1 mine emergency exercise to be held at a coal mine in Queensland.

The exercise was designed to test:

- the mine's emergency response system
- the ability of mine workers to self-escape in low-visibility conditions while wearing self-contained self-rescuers
- the ability of workers to effect the changeover of self-contained self-rescuers to compressed air breathing apparatus
- mobilisation of the Queensland Mines Rescue Service, including deployment underground, and establishing a fresh air base

- how installed systems and procedures were managed to locate missing personnel
- off-site communications response for incident respondents, including Queensland Mines Rescue Service, the inspectorate, Simtars and mine corporate communications.

In total, 24 assessors took part with representatives from industry, unions, government and mines rescue bodies. The exercise was generally considered a success, with a number of recommendations made for improvement for the mine and for the industry more broadly.

Key industry recommendations included the need to:

- further develop the skills and competency requirements of mine first responders to deal with fire events
- ensure coal mine workers practice the donning of self-contained self-rescuers and the changeover to compressed air breathing apparatus in very low visibility
- ensure consistency of emergency response standards
- ensure that when police are responding to an emergency they are not inhibited from entry into the surface areas of a mine if they are carrying their firearms.



Figure 9: Level 1 mine emergency exercise, 2017—Broadmeadow mine near Moranbah



Figure 10: level 1 mine emergency exercise, 2017—Broadmeadow mine near Moranbah



Figure 11: Level 1 mine emergency exercise, 2017—Broadmeadow mine near Moranbah

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

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.

After a successful pilot mineral mine level 1 exercise was conducted in 2016–17, the organising committee identified that level 1 emergency exercises would likely lead to safety improvements in Queensland underground mineral mines and should be run annually. Unfortunately, a follow up exercise was not completed in 2017–18.

Resources Safety and Health performance accountability framework

In July 2017, Resources Safety and Health published the *Resources Safety and Health performance accountability framework* to assess the performance of the coal mining, mineral mines and quarries, 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 will be self-assessed annually against the key performance indicators. Assessment may also include stakeholder consultation through surveys and other means. The first reporting period covers 1 July 2017 to 30 June 2018 and the report is due to be published by 31 December 2018.

The Resources Safety and Health performance accountability framework is available on the Business Queensland website at www.business.qld.gov.au.

Implementation of recommendations from the Coroners Court of Queensland

All high potential incidents in mines resulting in death are referred to the Coroners Court of Queensland to consider whether an inquiry is required under the *Coroner Act 2003*.

Since 1 January 2004, the Coroners Court of Queensland has held 11 inquests into mining-related deaths. In total, 84 recommendations were made in nine of those inquests regarding improvements that should be made to improve the safety and health of mine workers.

As at 30 June 2018, two recommendations from two inquests were still to be finalised. Work to progress these recommendations was completed in 2016–17 and legislative amendments were included in the Mines Legislation (Resources Safety) Amendment Bill 2017. However, the passage of this Bill was interrupted by the 2017 Queensland state election and a revised Bill was introduced in 2018. This revised Bill is expected to be passed by the Queensland Parliament in 2018–19 and should result in all outstanding recommendations being finalised.

Table 13: Outstanding recommendations from coronial inquests

INQUEST	DATE OF FINDINGS	RECOMMENDATION	CURRENT STATUS
Inquest into the death of Shane William Davis in 2005	21 March 2007	That consideration be given to amending section 44(6) of the <i>Coal Mining Safety and Health Act 1999</i> to require that manufacturers and suppliers inform the regulator, as well as their customers, in the event they become aware of the hazardous aspect of, or defect in, the equipment that the supplier has supplied to a coal mine.	Work to progress the recommendation carried out in 2016–17 Legislative amendments included as part of the Mines Legislation (Resources Safety) Amendment Bill 2018. Expected to be completed in 2018–19.
Inquest into the death of Jason George Elliott Blee in 2007	10 September 2009	That the coal mining industry adopt a system (whether through a central database or otherwise) whereby a coal mine worker, on departure from an operation, is provided with a full copy of their competencies, tickets and authorisations achieved whilst employed on that site. Further, that those documents be required to be placed on the record at subsequent operations the worker might be employed at in order to provide a ready cross reference of previous experience. The department should consider legislative amendments or other requirements being issued for this system to be implemented across the industry.	Work to progress the recommendation carried out in 2016–17 Legislative amendments included as part of the Mines Legislation (Resources Safety) Amendment Bill 2018. Expected to be completed in 2018–19.

Incident investigation reports

The Queensland Mines Inspectorate now publishes information and investigation reports for certain incidents that occur in the Queensland resources industry. These reports provide a factual account of the incident and the compliance actions that have been taken.

In 2017–18, the inspectorate published two reports into fatal incidents at Queensland mines:

- *Report into a fatality at the Newlands Mine Coal Handling and Preparation Plant, Newlands, Queensland on 30 August 2016.*
- *Report into a fatality at the Grasstree Coal Mine Middlemount, Queensland on 6 May 2014.*

Publishing investigation reports serves to hold industry participants accountable and provides an avenue for educating the community regarding major incidents in Queensland's resources industry. It also serves to maintain public confidence in the ability of the regulator to investigate incidents in the mining industry and to take appropriate corrective action when necessary.

The inspectorate intends to publish further investigation reports in 2018–19.

Stakeholder engagement and education

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

The Queensland Mines 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 2017–18, inspectors 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, and chairing of, the Queensland Mining Industry Health and Safety Conference
- participation in, and chairing of, the Occupational Health Mining Advisory Committee
- hosting the 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.

International stakeholder engagement

The Queensland Mines Inspectorate engages with mining industry regulators and stakeholders internationally to share knowledge and experiences to help improve the regulatory landscape in Queensland.

In February 2018, Chief Inspector of Mines (Coal) Russell Albury visited mining industry safety and health facilities in the United States of America and presented on behalf of the Queensland Mines Inspectorate at the Society for Mining, Metallurgy and Exploration annual expo in Minneapolis. Russell was accompanied by Simtars Mines Safety Technology Research Centre Director Gareth Kennedy.

Russell and Gareth visited the Mine Safety and Health Administration Pittsburgh Safety and Health Technology Center and also engaged with the National Institute for Occupational Safety and Health, touring the National Personal Protective Technology Laboratory and the Pittsburgh Mining Research Division.

They also visited the Northwestern Memorial Hospital in Chicago, engaging with leading coal workers' pneumoconiosis expert Dr Bob Cohen.



Figure 12: Chief Inspector of Mines (Coal) Russell Albury visiting mining safety and health research facilities in the United States of America

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.

The re-identification of coal workers' pneumoconiosis in 2015 brought to light a number of significant failings of the industry and the regulator in protecting workers from mine dust lung diseases. 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 2018, there have been 72 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.

The industry has become more aware of the need to protect workers from the dangers of mine dust and has taken significant action over the past three years. Substantial reductions in the levels of mine dust have been recorded in the past 12 months and the Queensland mining industry is now at the forefront of the fight against mine dust lung diseases.

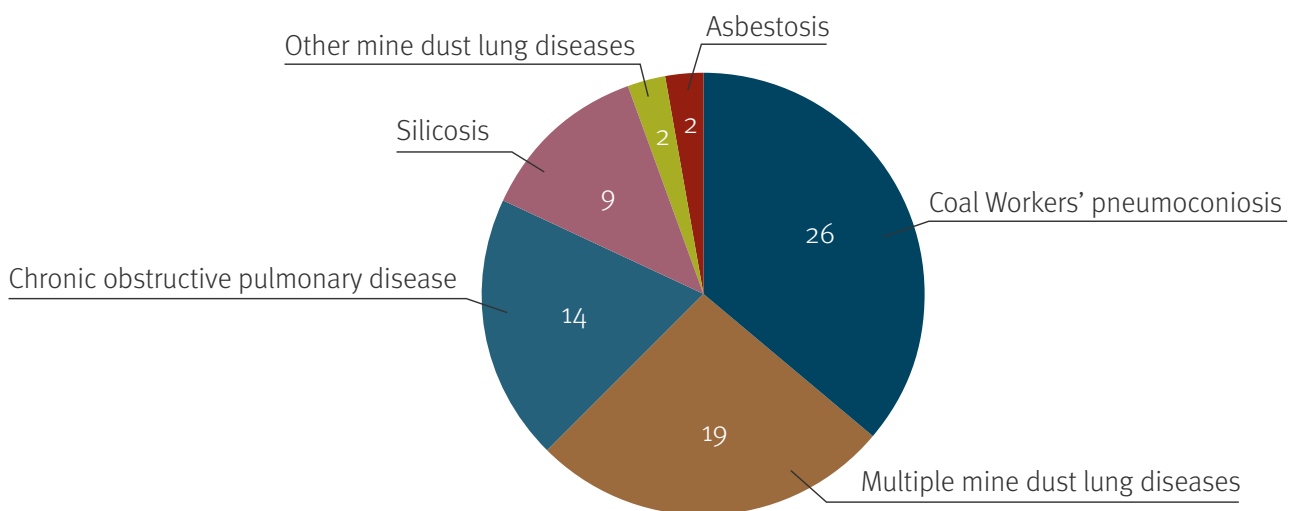


Figure 13: Reported cases of mine dust lung disease, 1984–30 June 2018

Monash University Centre for Occupational and Environmental Health review

Central to the reforms relating to coal workers' pneumoconiosis was the independent review commissioned on the respiratory component of the Coal Mine Workers' Health Scheme. The review was undertaken by the Monash University Centre for Occupational and Environmental Health, in collaboration with the University of Illinois at Chicago, and made 18 recommendations to improve the health scheme.

All 18 of the recommendations have now been delivered. This was achieved with the support of government, industry, unions and medical experts.

Regulatory amendments include:

- compulsory chest X-rays and lung function tests
- medicals for retiring and former coal miners
- mandatory reporting of coal mine dust lung diseases
- a register of qualified and experienced medical providers

- a clinical pathway guideline to ensure consistency in the referral and diagnosis of coal mine dust lung disease
- a training program for doctors undertaking health assessments for Queensland coal mine workers
- spirometry standards developed by the Thoracic Society of Australia and New Zealand.

Since July 2016, the department has sent more than 30,308 chest X-rays to the United States of America for assessment by National Institute for Occupational Safety and Health approved b-readers. In total, 18,385 chest X-rays have been returned to the department, which equates to more than half the Queensland coal mining workforce.

The reading of Queensland coal mine worker chest X-rays has also continued to transition to Australian providers as part of a sustainable model of respiratory health screening. To support this, the department facilitated a B-reader training course in Brisbane to establish a cohort of B-reader qualified radiologists in Queensland. This resulted in 13 radiologists now being B-reader qualified.



The department also progressed the following improvements to address the recommendations of the Monash review:

- the establishment of an electronic portal to submit and request coal mine worker health assessments
- development of information for workers including online videos and pocket-book guides with orders taken for more than 13,000 copies
- development of chest X-ray imaging standards in consultation with members of the Royal Australian and New Zealand College of Radiologists.

With these reforms in place, the department continues to work in collaboration with unions and industry to embed and enhance the improvements made to the regulatory environment.

On 14 June 2017, the government introduced a Bill into Parliament—the Workers’ Compensation and Rehabilitation (Coal Workers’ Pneumoconiosis) and Other Legislation Bill 2017—that included amendments to existing legislation to implement recommendations from the Coal Workers’

Pneumoconiosis Workers’ Compensation Stakeholder Reference Group, including:

- the option of a medical examination for retired or former coal mine workers who have left the industry prior to 1 January 2017 and are concerned they may have a coal mine dust lung disease
- ensuring a coal mine worker with pneumoconiosis who experiences disease progression can re-open their claim and access further benefits under the workers compensation scheme
- the introduction of an additional lump sum compensation entitlement for coal mine workers with pneumoconiosis.

The Bill was passed by the Queensland Parliament on 23 August 2017.

As recommended in the Monash review, another independent review will be commissioned next year to ensure that the Coal Mine Workers’ Health Scheme continues to perform according to best practice.

Education and information

In 2017–18, the department launched the Miners Health Matters information portal for workers.

The web-based portal provides information and a series of short videos discussing coal workers pneumoconiosis, prevention and detection of occupational lung disease, and support for workers who have received a diagnosis of occupational lung disease.

A suite of handbooks has also been developed for workers and industry stakeholders which provides advice on disease prevention and mine worker health assessment.

Reforms to manage coal mine dust

Significant reforms in the management of coal mine dust have been implemented since cases of coal workers’ pneumoconiosis were re-identified in 2015.

The department has implemented a range of regulatory reforms and strengthened monitoring requirements to support these improvements. In January 2017, the Coal Mining Safety and Health Regulation 2017 was amended to require all Queensland coal mines to report respirable dust monitoring results to the inspectorate, as well as any single exceedances of the occupational exposure limit. In addition, two recognised standards were developed to assist coal mines to meet their reporting requirements. The department currently reports dust monitoring data on a quarterly basis to the Coal Mining Safety and Health Advisory Committee and publishes the results on the Business Queensland website.

Following the increased focus on dust monitoring and control and the implementation of legislative reforms, there has been a significant increase in the rate of dust monitoring and sampling being undertaken in Queensland’s mines (figure 14).

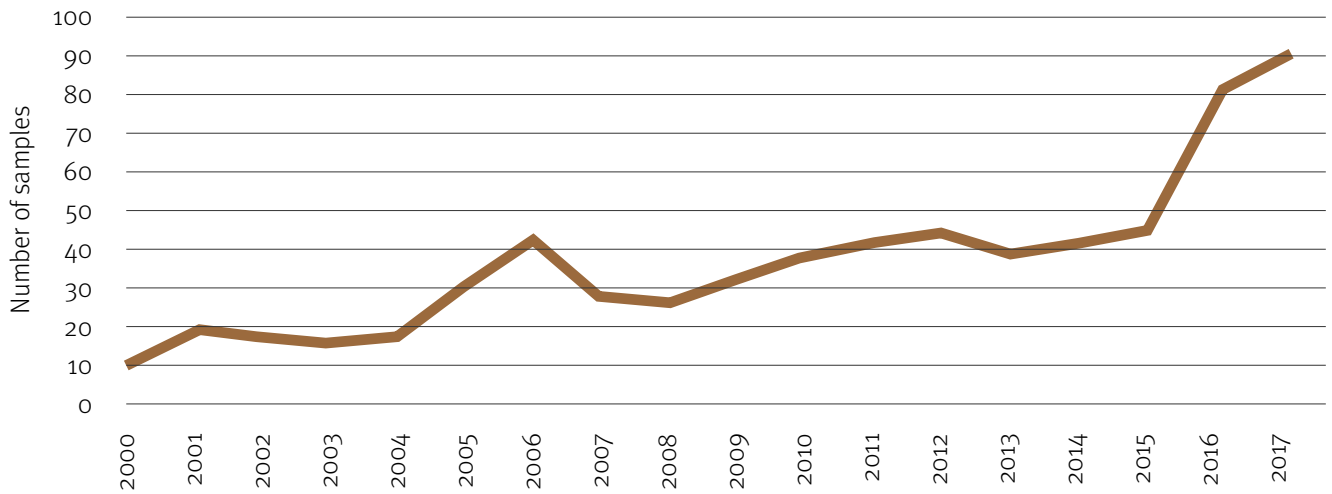


Figure 14: Sampling rate per mine 2000–2017

Dust monitoring data collected in 2017–18 shows that the reforms have had a positive effect on reducing the risk to coal mine workers and other people involved in the coal mining industry. Figure 15 shows the average respirable coal dust concentrations for all underground coal mines for the

longwall similar exposure group for the past 10 years. Similar declines have been recorded for other high-risk similar exposure groups such as development, field maintenance and blast crews.

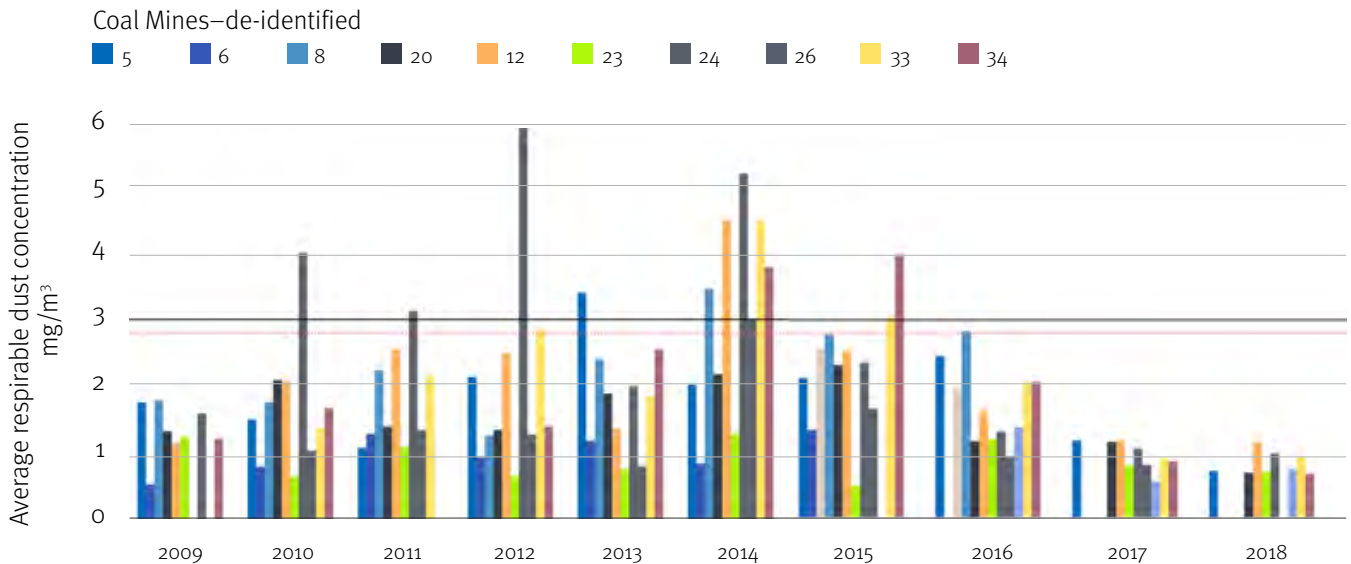


Figure 15: Average respirable coal dust concentrations for the longwall similar exposure group, 2009–2018

In addition, the number of times that mines have exceeded the occupational exposure limit for coal dust has also continued to decline. For both underground and surface sites, the total percentage of respirable dust samples that

exceeded the occupational exposure limit for 2017–18 was 0.7 per cent of all samples taken (47 instances), compared to 2.2 per cent during 2016–17 (109 instances).

Table 14: Respirable coal dust, all sites combined

COAL							
	UNDERGROUND AND OPEN CUT COMBINED			SEG AVERAGES UNDERGROUND		SEG AVERAGES OPEN CUT	
	NUMBER OF SAMPLES	NUMBER OF EXCEEDANCES	PERCENTAGE OF EXCEEDANCES	LONGWALL (MG/M ³)	DEVELOPMENT (MG/M ³)	FIELD MAINTENANCE (MG/M ³)	BLAST CREW (MG/M ³)
2016-17	4921	109	2.2%	1.24	0.80	0.14	0.23
2017-18	7089	47	0.7%	0.88	0.67	0.22	0.21

These reforms have also helped to reduce respirable crystalline silica levels in Queensland coal mines.

Respirable crystalline silica dust monitoring data collected in Queensland coal mines in 2017–18 shows that the reforms implemented to reduce respirable crystalline silica

levels have had a positive effect on reducing the risk to mine workers and other people involved in the coal mining industry.

Table 15: Respirable crystalline silica in coal mines, all sites combined

SILICA							
	UNDERGROUND AND OPEN CUT COMBINED			SEG AVERAGES UNDERGROUND		SEG AVERAGES OPEN CUT	
	NUMBER OF SAMPLES	NUMBER OF EXCEEDANCES	PERCENTAGE OF EXCEEDANCES	LONGWALL (MG/M ³)	DEVELOPMENT (MG/M ³)	FIELD MAINTENANCE (MG/M ³)	BLAST CREW (MG/M ³)
2016-17	4499	47	1.0%	0.01	0.01	0.01	0.02
2017-18	7072	89	1.3%	0.01	0.01	0.02	0.02

In 2017–18, the average respirable crystalline silica concentration for all underground coal mines for the two most at-risk work groups—longwall and development—was well below the most common shift-adjusted occupational exposure limit of 0.09 mg/m³.

The number of mines that have exceeded the occupational exposure limit is also low. For both underground and surface sites, the total percentage of respirable crystalline silica samples that exceeded the occupational exposure limit for 2017–18 was 1.3 per cent of all samples taken (89 instances).

Management of respirable crystalline silica in mineral mines and quarries

Silicosis is an occupational lung disease caused by inhalation of respirable crystalline silica dust and is a type of pneumoconiosis. Crystalline silica is a component of many types of mineralised and quarried rock extracted at Queensland coal mines and mineral mines and quarries.

A survey completed in July 2017 showed:

- 97.2 per cent of workers had mean exposure limits compliant to the occupational exposure limit of 0.1 mg/m^3

- 93 per cent of workers have their respirable crystalline silica exposure character monitored
- 91 per cent of workers undergo periodic health checks.

As part of a workshop in July 2017, 36 mineral mine and quarry operations provided respirable crystalline silica exposure monitoring results covering five years. The data set of approximately 4500 exposure monitoring results covered a workforce of 8500 workers (62.5 per cent of mineral mine and quarry workers).

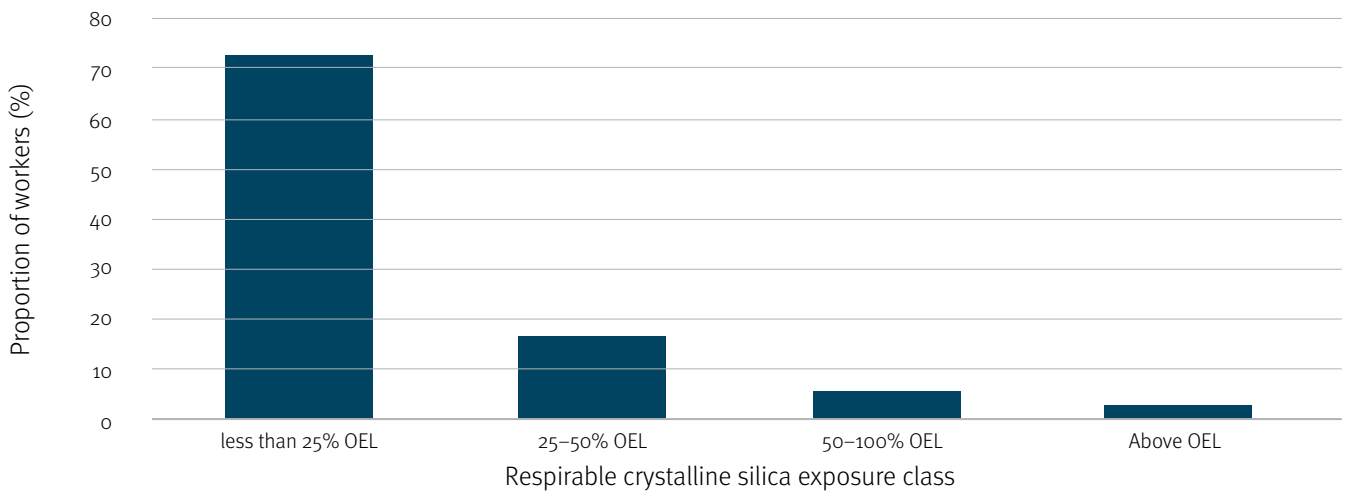


Figure 16: Distribution of worker exposure to respirable crystalline silica

Guideline for the management of respirable crystalline silica

In August 2017, the Queensland Mines Inspectorate published *QGLo2 Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries* to address the lack of standardisation in health surveillance in mineral mines and quarries in relation to respirable crystalline silica and to address relevant recommendations from the Monash review.

The guideline prescribed the medical assessment requirements for health surveillance, minimum sample numbers and periodic exposure monitoring to quantify worker exposure, and directed mines to investigate and eliminate overexposure to respirable crystalline silica and minimise exceedances.

The guideline also required mines to conduct statistical analysis on every similar exposure group and implement control measures to reduce the exposure for any work group with Land's upper confidence level above the occupational exposure group. This will drive the work group's mean exposure to a level that is lower than the occupational exposure limit by a margin that is statistically significant.

Under the guideline, mineral mines and quarries were required to only notify the inspectorate of exceedances of the occupational exposure limit and it did not require reporting of all monitoring results. In July 2018, a revised guideline was issued and now all dust monitoring results must be reported to the inspectorate, regardless of whether there has been an exceedance. This brings dust monitoring requirements for mineral mines and quarries into line with that of coal mines.

The guideline requires the site senior executive to investigate every exceedance. The investigation must be documented and identify the cause of the exceedance, and control measures implemented or taken to prevent any recurrence. The site senior executive is also required to apply effective control measures to ensure that workers are not overexposed until engineering control measures are implemented and proven to be effective—for example, by using respiratory protective equipment. This will drive the mean exposure for each workgroup lower and decrease the risk to workers.

Inclusion of respirable crystalline silica results for mineral mines and quarries in the dust database

As a result of changes to *QGLo2 Guideline for management of respirable silica in Queensland mineral mines and quarries* from July 2018, mineral mines and quarries will now be required to report all respirable crystalline silica monitoring data to the inspectorate. This will result in data from more than 1600 mineral mines and quarries being added to the dust database and will allow the inspectorate to gain a comprehensive understanding of respirable crystalline silica hazards.

To facilitate this, the inspectorate completed significant work in 2017–18 in conjunction with industry to consolidate more than 600 similar exposure groups to 73 reporting classes in both surface and underground mines and in quarries. Several factors drove the large number including: diversity of the industry, differentiation of the work group based on the stage of the mining process, and work groups covering different ranges in the workforce. In order to comparatively evaluate the performance of individual mines and quarries across sites, work groups must be comparable. This consolidation of the multiple similar exposure groups allows the inspectorate to comparatively evaluate the performance across individual mines and quarries and identify emerging trends related to respirable crystalline silica.

A significant change management process was required to assist hundreds of individual sites to comply with the reporting process.

Compliance activities for respirable crystalline silica at mineral mines and quarries

In 2017–18, the Queensland Mines Inspectorate developed a structured inspection guide and used this to assess the management of respirable crystalline silica dust monitoring and health surveillance at all mineral mines, quarries and sandstone mines. Inspections were prioritised based on individual mine and quarry dust-related risk profiles.

In 2017–18, the inspectorate completed 73 inspections against the requirements of the guideline for respirable crystalline silica, including 10 in underground operations, 7 in surface operations, 47 in quarries, 8 in sandstone operations and 1 at an exploration site.

CASE STUDY

COAL MINE WORKERS STRUCK BY COAL FROM A LONGWALL FACE



Maingate end of the Rapid Face Bolter



Tailgate side of the Rapid Face Bolter

Three coal mine workers at a Central Queensland mine were struck by coal which fell from a longwall face. The workers were conducting a longwall bolt-up using a combination of three rapid face bolters deployed via a chute road entry. The accident occurred when the coal face spalled over the top of the rapid face bolter while four coal mine workers were still on board.

One worker was admitted to hospital as an inpatient for non-life threatening injuries, another was treated for minor injuries and released from hospital the same day and a third sustained a glancing blow to the back of his hand which did not require treatment.

In the preceding year, eight coal mine workers in Queensland underground coal mines were injured while engaged in strata control activities on the face side of the armoured face conveyor. The injuries occurred primarily during longwall bolt-up and meshing activities in preparation for a longwall move.

The inspectorate carried out an investigation that resulted in directives being issued to the site senior executive and compliance actions conducted with 18 site employees. Letters were also issued to suppliers of the hire equipment and consultants engaged to facilitate the site's investigation, providing a brief of the incident and areas for improvement to be addressed.

The investigation found:

- systemic failings in management and review of the safety and health management system
- failure to maintain an acceptable level of risk in the workplace, identified at a number of levels
- examples where the site safety and health management system was not followed and documents were not accessible to workers
- gaps and omissions in risk assessments
- a lack of controls to prevent the accident occurring
- individual obligations under the *Coal Mining Safety and Health Act 1999* either not discharged or not understood
- evidence of a lack of line of control/management of the mine in implementing corrective actions for hazardous conditions recorded on statutory reports
- workers not fully aware of rapid face bolter limitations/ extent of reach to contact roof
- inconsistencies in findings from the site's investigation
- deficiencies in original equipment manufacturer's risk assessment to provide fit for purpose equipment.

As a result of the investigation, the inspectorate made 13 recommendations to the industry to improve safety in similar situations.

PEOPLE

Resourcing

The Queensland Mines Inspectorate 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 2018, the inspectorate employed 43 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 six regional offices which are located close to the mining and quarrying operations which they regulate.

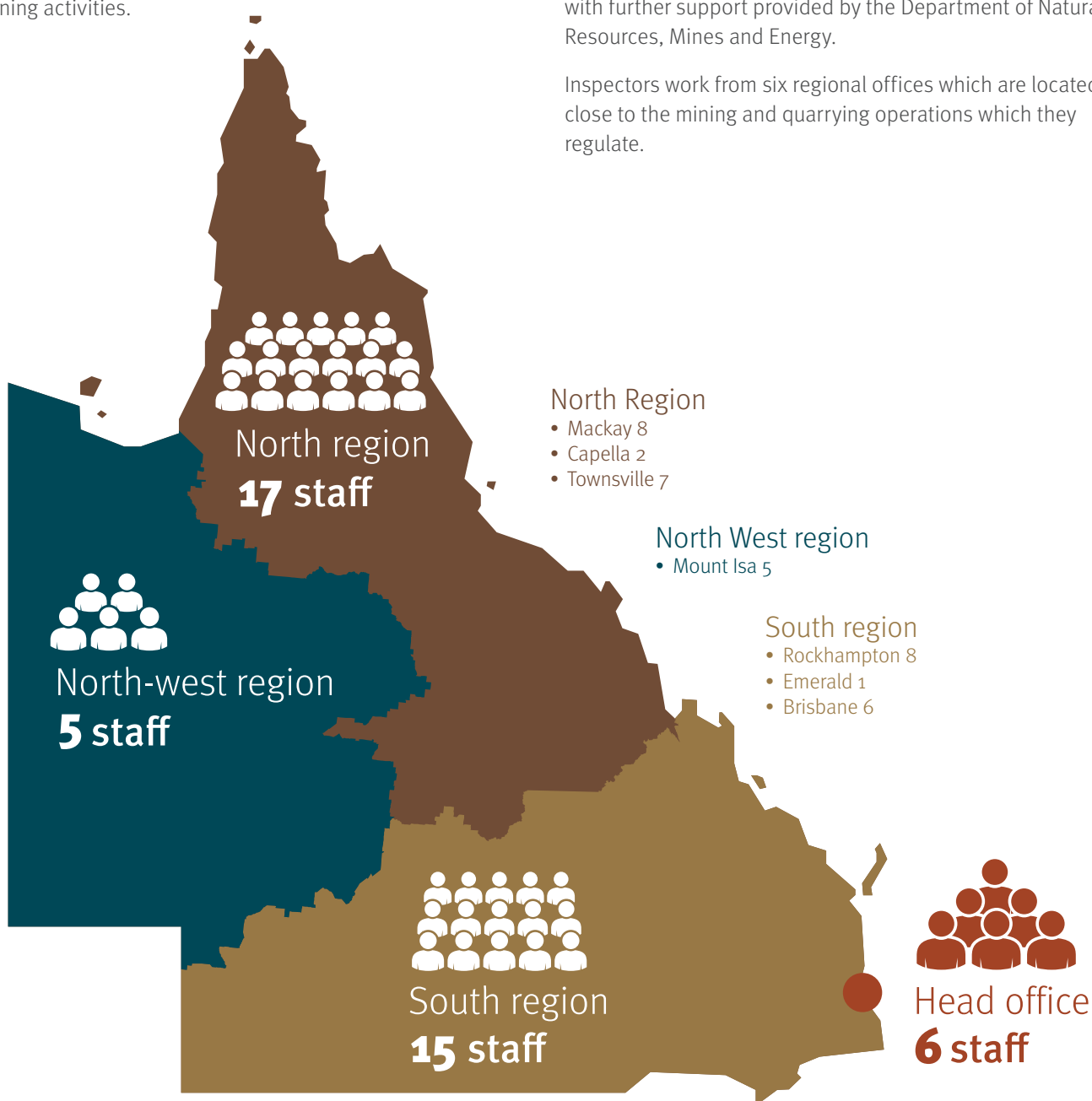


Figure 17: Location of mines inspectors in Queensland

In 2017–18, 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.

Appointment of Chief Inspector of Mines (Mineral Mines and Quarries)

In September 2017, Luca Rocchi was appointed to the role of Chief Inspector of Mines (Mineral Mines and Quarries). Luca brings 35 years of coal and non-coal mining experience gained in Australia and internationally. He holds a degree in mining engineering and a coal mine manager's first class certificate.

Luca succeeds Phil Goode who gave many years of dedicated service to the mines inspectorate as a senior inspector and chief inspector.



Figure 18: Chief Inspector of Mines (Mineral Mines and Quarries) Luca Rocchi speaking at the Queensland Mining Safety and Health Conference

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.

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, 16 mines inspectors have completed the diploma, with 10 completing the training in 2017–18. Three mines inspectors undertook the training in 2017–18 and are in the process of completing final assessments and a further six mines inspectors are undertaking a recognition of prior learning process which is expected to be completed in 2018–19.

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.

In 2017–18, more than 40 different training courses were delivered to inspectors covering legislation, governance and the technical aspects of undertaking their role as a regulator.

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 sub-committees.

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 highly aware of the risks of regulatory capture and mitigates the risk by ensuring inspectors complete a range of integrity and ethics training to raise their awareness of regulatory capture and how it occurs. 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.

Strict 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 inspect and audit mines based on the compliance area of interest and skill set of the inspector.

In its second report to the Queensland Parliament, the Coal Workers' Pneumoconiosis Select Committee identified that, although there was potential for regulatory capture to occur, there was no evidence that it had impacted upon the inspection or compliance activities of the inspectorate.

COMMISSIONER FOR MINE SAFETY AND HEALTH ACTIVITIES



Figure 19: Commissioner for Mine Safety and Health Kate du Preez at the Mining Industry Safety and Health Conference 2017

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 2017–18, 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 the annual Quarrying Safety and Health Conference
- met with various site senior executives
- met with Western Australian mining industry stakeholders
- made four requests for information or investigation to the Executive Director of Resources Safety and Health
- received one request for information under the *Right to Information Act 2009*
- published a quarterly stakeholder newsletter.

Advisory committee meetings

The Commissioner chaired and attended 19 advisory committee meetings, including:

- nine Coal Mining Safety and Health Advisory Committee meetings (chair)
- eight Mining Safety and Health Advisory Committee meetings (chair)
- two Occupational Health Mining Advisory Committee meetings (observer).

Mine and quarry site visits

In 2017–18, the Commissioner undertook a program of mine and quarry site visits to help develop better relationships with industry and workers, promote awareness of mine safety and health issues, and raise awareness of the role of the Commissioner for Mine Safety and Health.

Visiting mine and quarry sites enables the Commissioner to better understand the spectrum of mining activity taking place across Queensland and to speak directly to mine workers and operators about safety and health issues.

The Commissioner visited a number of mine sites and quarries throughout the year and engaged with miners, union representatives, mine managers, district workers' representatives, inspectors and investigators. The commissioner visited sites at:

- Broadmeadow Mine, Moranbah—July 2017
- Queensland Mines Rescue Service, Dysart Mines Rescue Station—August 2017 (47th EK Healy Cup mines rescue competition)
- West Wyalong (town) NSW—September 2017 (NSW Mine Rescue Challenge 2017)
- Whitehaven Mine, Narrabri NSW—October 2017 (55th Australian underground mines rescue competition)
- Broadmeadow Mine, Moranbah—November 2017 (Level 1 mine emergency exercise 2017)
- Kincora Gas Project, Roma—November 2017
- Various quarry sites, Hervey Bay—January 2018
- Mount Isa Mines, Mount Isa—March 2018
- Mungari Mine, Kalgoorlie WA—April 2018
- Orange Grove Quarry, Perth WA—April 2018
- Northern Star Mine, Kalgoorlie WA—April 2018.

Presentations

In 2017–18, the Commissioner attended a number of industry conferences and events. The Commissioner presented at the:

- 28th Mining Electrical Safety Conference—July 2017
- Queensland Mining Industry Safety and Health Conference—August 2017
- Australian Mine Ventilation Conference—August 2017
- 47th EK Healy Cup mines rescue competition—August 2017
- Women in Energy and Resources Leadership Summit—October 2017
- Queensland Mines Safety and Health Industry Briefing—October 2017
- WIMARQ/Glencore International Women's Day event—March 2018
- Women in Quarrying Conference—March 2018
- Resources Safety and Health bi-annual review—March 2018

- WIMARQ Women in Underground Mining—May 2018
- Quarrying Safety and Health Conference—June 2018.

Coal Mining Safety and Health Advisory Committee

The Coal Mining Safety and Health Advisory Committee is a tripartite group consisting of nine members representing industry, mineral mine and quarry workers and the inspectorate.

The Minister for Natural Resources and Mines appoints the members, taking into consideration their experience in the industry and demonstrated commitment to promoting safety and health standards.

Under the *Coal Mining Safety and Health Act 1999*, the primary function of the advisory committee is to give advice and make recommendations to the Minister about promoting and protecting the safety and health of coal mine workers.

The committee does this by:

- reviewing the effectiveness of the legislation (Act, Regulations and recognised standards)
- reviewing the effectiveness of the control of risk to any person from coal mining operations
- recognising, establishing and publishing
 - the competencies qualifying a person to perform tasks prescribed under a Regulation
 - the safety and health competencies required to perform the duties of a person under the Act.

Activities of the advisory committee

In 2017–18, the advisory committee held nine meetings and one non-quorum meeting.

The advisory committee:

- continued its review of the effectiveness of the full suite of coal mining safety and health legislation, including two workshops
- analysed and provided advice regarding 25 proposed amendments to the *Coal Mining Safety and Health Act 1999* contained in the Mining Resources (Safety and Health) Bill 2018
- provided advice to the department and Minister on the mandated remake of the Coal Mining Safety and Health Regulation 2001

- worked closely with the department on the development or updating of recognised standards for underground electrical equipment and electrical installations, underground non-flameproof diesel vehicles and monitoring respirable dust in coal mines
- commenced a quarterly review of dust results from the respirable dust database
- evaluated the suitability of the Thermo Scientific PDM3700 Personal Dust Monitor in surface and underground coal mines as a monitoring tool in conjunction with an industry project team and Simtars
- considered and provided advice to the Minister regarding the ongoing review by Safe Work Australia of the exposure standards for around 700 airborne contaminants
- provided detailed advice to the Minister in relation to the *Options for resources safety and health regulator models in Queensland* discussion paper produced by the project management office
- updated competencies for trainers and training assessors
- continued to review competencies for shot-firers and for people providing safety and health related instructions.

Stakeholder engagement

The advisory committee consulted extensively with coal mining stakeholders, including:

- coal mine operators including Glencore and AngloAmerican
- coal mining related unions
- the Queensland Mines Inspectorate
- the department's Occupational Health and Hygiene unit
- the department's Explosives Inspectorate
- mining industry senior stakeholders
- Safe Work Australia
- the Occupational Health Mining Advisory Committee
- Resources Industry Training Council.

Mining Safety and Health Advisory Committee

The Mining Safety and Health Advisory Committee is a tripartite group consisting of nine members representing industry, mineral mine and quarry workers and the inspectorate.

The Minister for Natural Resources, Mines and Energy appoints the members, taking into consideration their experience in the industry and demonstrated commitment to promoting safety and health standards.

Under the *Mining and Quarrying Safety and Health Act 1999*, the primary function of the advisory committee is to give advice and make recommendations to the Minister about promoting and protecting the safety and health of mine and quarry workers.

The committee does this by:

- reviewing the effectiveness of the legislation (Act, Regulations and guidelines)
- reviewing the effectiveness of the control of risk to any person from mining operations
- recognising, establishing and publishing
 - the competencies qualifying a person to perform stated tasks
 - the safety and health competencies required to perform the duties of a person under the Act.

Activities of the advisory committee

In 2017–18, the advisory committee held eight meetings.

The advisory committee:

- held a workshop with 24 stakeholders representing the department, mine and quarry workers, and mine and quarry operators to consider the impacts of respirable crystalline silica
- continued its review of the effectiveness of the full suite of mining and quarrying safety and health legislation
- analysed and provided advice regarding 36 proposed amendments to the *Mining and Quarrying Safety and Health Act 1999* contained in the Mining Resources (Safety and Health) Bill 2018
- provided advice to the department and Minister on the mandated remake of the Mining and Quarrying Safety and Health Regulation 2001

- worked closely with the department on the development of a new Queensland Guideline relating to the management of respirable crystalline silica and the review and update of the guideline
- worked closely with the department on the development of guidance notes for fall prevention, collision prevention, surface tailings storage facility management, shaft construction, and tyre, wheel and rim management
- commenced a review of the adequacy of all mineral mining and quarrying competencies
- implemented new competencies to replace the existing requirements for site senior executives of quarries and surface mineral mines
- implemented a new competency for people carrying out respirable dust sampling in mineral mines and quarries
- considered the competencies that a ventilation officer will require if the Mining Resources (Safety and Health) Bill 2018 is passed
- considered new competencies for management of tailings storage facilities.

Stakeholder engagement

The advisory committee consulted extensively with mining and quarrying stakeholders, including:

- Safe Work Australia
- the University of Queensland
- mining and quarrying related unions
- mineral mine and quarry operators
- the department's Occupational Health Mining Advisory Committee
- the department's occupational physician Dr Ki Douglas
- the project management office
- the department's mineral mine and quarry inspectors
- the department's Explosives Inspectorate.

Occupational Health Mining Advisory Committee

The Occupational Health Mining Advisory Committee is a tripartite group consisting of 12 members representing industry, coal mine and mineral mine and quarry workers, and the inspectorate. The committee transitionally reported to the Commissioner for Mine Safety and Health and the Executive Director of Resources and Health. Members are appointed with consideration of their occupational health and technical skills and knowledge of mining health issues.

The primary function of the advisory committee is to promote and protect the occupational health of mine workers.

The committee does this by providing advice and making recommendations to industry about:

- issues related to occupational hygiene and occupational ergonomics
- complex multifactorial societal or community issues that have an impact on mine workers—for example, mental health, drug use and abuse, obesity, smoking and fatigue.

In 2017–18, the advisory committee focussed on drugs and alcohol in mines and respirable crystalline silica.

In relation to drugs and alcohol, the committee:

- completed and tested a survey for mines to report on drug testing programs
- met with the Queensland Police Service on the prevalence of concerns about drug and alcohol use and mitigation approaches
- considered Queensland Police Service testing standards
- worked with the department's occupational physician to develop a draft list of prescription and over-the-counter medications and associated risks for mining.

In relation to respirable crystalline silica, the committee organised a workshop with the Mining Safety and Health Advisory Committee to examine exposure data and implications of a possible reduction in the occupational exposure limit.

Queensland Government women on boards initiative

The Queensland Government is committed to increasing the number of women on boards in the public, private and not-for-profit sectors.

The Commissioner is a strong supporter of this initiative and has committed to increasing the number of women on both the Coal Mining Safety and Health Advisory Committee and the Mining Safety and Health Advisory Committee.

One of the key challenges faced by the advisory committees in increasing the representation of women is the small number of women currently working in the industry. This challenge is compounded by the low proportion of women in the industry who have appropriate levels of experience and qualifications.

In 2017–18, the Commissioner engaged broadly with industry to promote increased representation of women on boards and to promote and advocate for more women to enter the industry and to complete suitable qualifications that would qualify them to participate on the advisory committees and other industry boards.

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 Queensland Mines Inspectorate plays a significant role in protecting mine workers from the harmful impacts of lead exposure. It does this by setting limits for blood lead removal levels in workers and the maximum permissible airborne concentrations of lead in the workplace.

A recent workshop conducted by the Mining Safety and Health Advisory Committee found that, over the past decade, a significant reduction in blood lead levels in workers has been achieved and the industry has taken active steps to reduce exposure.

In 2017–18, the Commissioner attended two Mount Isa Lead Health Management Committee meetings.

APPENDIX 1: QUEENSLAND GOVERNMENT ACTIONS TO DELIVER MONASH REVIEW RECOMMENDATIONS

Table A1: Key Queensland Government actions to deliver Monash review recommendations as at 30 June 2018

RECOMMENDATION	ACTIONS DELIVERED IN 2017–18
<p>1. The main purpose of the respiratory component of the scheme should explicitly focus on the early detection of coal mine dust lung disease (CMDLD) among current and former coal mine workers</p> <p>Information pack about CMDLD should be developed for workers</p>	<ul style="list-style-type: none"> • An online information portal for coal mine workers has been developed. • Coal Mining Safety and Health Regulation 2017 was amended to give effect to the reforms <ul style="list-style-type: none"> – consultation draft released 24 April 2018 and closed 11 May 2018 – health surveillance as purpose of the scheme – health assessments for retired workers – enable health surveillance, including by allowing release of identified data for research purposes if approved by an ethics committee – enable quality assurance – 5-yearly X-rays for all coal mine workers – mandatory <i>approved provider</i> framework – replace <i>nominated medical adviser</i> with <i>appointed medical adviser</i> – retirement examination may be asked for by a person who permanently retires from working as a coal mine worker. • Regulation effective 20 July 2018.
<p>2. Develop clinical guidelines for follow-up investigation and specialist referral and incorporate into the scheme</p>	<ul style="list-style-type: none"> • No additional actions required in 2017–18.
<p>3. Reporting of cases of CWP and CMDLD in current and former coal miners identified by the scheme</p>	<ul style="list-style-type: none"> • No additional actions required in 2017–18.

RECOMMENDATION	ACTIONS DELIVERED IN 2017–18
4. Amend health assessment form to include separate respiratory section including all respiratory components (radiology report to ILO format and spirogram tracings and results)	<ul style="list-style-type: none"> No additional actions required in 2017–18.
5. Amend form to include a comprehensive respiratory medical history and symptom questionnaire	<ul style="list-style-type: none"> No additional actions required in 2017–18.
6. The criteria to determine workers ‘at risk from dust exposure’ should be based on past and current employment in underground coal mines and designated work categories in open-cut coal mines and coal handling and preparation plants	<ul style="list-style-type: none"> No additional actions required in 2017–18.
7. Establish small pool of approved doctors undertaking respiratory component of health assessments under scheme, taking into account geography and other workforce needs	<ul style="list-style-type: none"> No additional actions required in 2017–18.
8. Establish mandatory formal doctor training program, including mine visits, prior to approval by DNRME, to ensure competence and experience to undertake respiratory health assessments under the scheme	<ul style="list-style-type: none"> The department awarded the development and delivery of a comprehensive training package for doctors performing Coal Mine Workers’ Health Scheme respiratory health assessment. The first training was delivered in December 2017 in Mackay and online training materials are being developed and delivered.
9. Establish approval process for doctors to undertake respiratory health assessments for the early detection of CMDLD under the scheme	<ul style="list-style-type: none"> No additional actions required in 2017–18.

RECOMMENDATION	ACTIONS DELIVERED IN 2017–18
10. Determine and implement an alternative designation (rather than NMA) for doctors approved to undertake respiratory health assessments, which reflects specific responsibility for respiratory health assessments under the new scheme	<ul style="list-style-type: none"> Following stakeholder consultation, the new designation is <i>appointed medical advisor</i>. This is reflected in the amended Regulation which became effective in July 2018.
11. Chest x-rays should be performed by appropriately trained staff to a suitable standard of quality and performed and interpreted according to the current ILO Classification by radiologists and other medical specialists classifying chest x-rays	<ul style="list-style-type: none"> Registers for medical professionals involved in the Coal Mine Workers' Health Scheme are now live on the department's website. This moved from a voluntary arrangement to a regulated government register during 2018. The register includes radiologists and those who hold the NIOSH B-reader qualification.
12. Spirometry should be conducted by appropriately trained staff and performed and interpreted according to current ATS/ERS standards	<ul style="list-style-type: none"> Approved provider framework (register) of spirometry providers is included in amended regulation. Thoracic Society of Australia and New Zealand has developed spirometry taking, interpreting and training standards. These were implemented in December 2017.
13. Transition to an electronic system of data entry and storage and establish an audit process to include regular audit of collected medical information for quality control and feedback to doctors performing health assessments under the scheme	<ul style="list-style-type: none"> The department remains in partnership with the Department of Health and is developing an electronic record management system.
14. Amend scheme to require all coal mine workers 'at risk from dust exposure' to be registered in the DNRME database on entry to industry for ongoing medical surveillance	<ul style="list-style-type: none"> No additional actions required in 2017–18.

RECOMMENDATION	ACTIONS DELIVERED IN 2017–18
15. DNRME to conduct ongoing individual and group surveillance of health data collected under the scheme, to detect early CMDLD, analyse trends, and disseminate to employers, unions and workers	<ul style="list-style-type: none"> No additional actions required in 2017–18.
16. Amend scheme to require coal mine workers to have exit respiratory health assessments and include retired and former coal mine workers in health surveillance	<ul style="list-style-type: none"> Changes to the Coal Mine Workers’ Health Scheme were made through an amendment to the Coal Mining Safety and Health Regulation 2017 in July 2018. New provisions for retired and former coal mine workers to be entitled to respiratory health assessment.
17. Establish an implementation group, including relevant stakeholders, to ensure recommendations are implemented in a timely manner	<ul style="list-style-type: none"> No additional actions required in 2017–18.
18. There should be a further review of the revised scheme within 3 years to ensure that it is designed and performing according to best practice	<ul style="list-style-type: none"> Review scheduled for 2018–19.

ABBREVIATIONS AND DEFINITIONS

Abbreviations

CMSHAC	Coal Mining Safety and Health Advisory Committee
CWP	Coal workers' pneumoconiosis
DNRME	Department of Natural Resources, Mines and Energy
MDLD	Mine dust lung disease
MMQ	Mineral mines and quarries
MSHAC	Mining Safety and Health Advisory Committee
Simtars	Safety in Mines Testing and Research Station

Definitions

Coal mine:	Mine subject to the <i>Coal Mining Safety and Health Act 1999</i> and associated Regulation
Serious accident:	An accident at a mine that causes: <ul style="list-style-type: none"> (a) the death of a person or (b) a person to be admitted to a hospital as an inpatient for treatment of the injury
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
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
Go-line:	An assembly area on the surface where mobile plant is left after servicing and when available for use

HANG BELTS ON HOOKS
NOT FROM BASKET

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ERRATUM

Commissioner for Mine Safety and Health—Annual performance report 2017–18

The report is amended to correct two figures in Table 1 on page 8, being those for the lost time injury frequency rate for mineral mines and quarries, as follows.

Omit:

Table 1: Numbers and rates of incidents in 2017–18 compared to 2016–17

ALL MINE TYPES					
	2017–18		2016–17		
Number of lost time injuries	292		309		
Lost time injury frequency rate	2.8		3.4		
Fatalities	1		2		
Number of high potential incidents	2164		1888		
High potential incident frequency rate	20.7		20.7		
COAL MINES			MINERAL MINES AND QUARRIES		
	2017–18	2016–17		2017–18	2016–17
Number of lost time injuries	227	234	Number of lost time injuries	65	75
Lost time injury frequency rate	3.2	3.6	Lost time injury frequency rate	1.5	2.1
Fatalities	1	1	Fatalities	0	1
Number of high potential incidents	1776	1544	Number of high potential incidents	388	344
High potential incident frequency rate	25.0	24.1	High potential incident frequency rate	11.6	12.7

Insert:

Table 1: Numbers and rates of incidents in 2017–18 compared to 2016–17

ALL MINE TYPES					
	2017–18		2016–17		
Number of lost time injuries	292		309		
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COAL MINES			MINERAL MINES AND QUARRIES		
	2017–18	2016–17		2017–18	2016–17
Number of lost time injuries	227	234	Number of lost time injuries	65	75
Lost time injury frequency rate	3.2	3.6	Lost time injury frequency rate	1.9	2.8
Fatalities	1	1	Fatalities	0	1
Number of high potential incidents	1776	1544	Number of high potential incidents	388	344
High potential incident frequency rate	25.0	24.1	High potential incident frequency rate	11.6	12.7