Queensland Government

Department of
Natural Resources and Mines

9 December 2016

Mrs Jo-Ann Miller MP
Chair, Coal Workers' Pneumoconiosis select committee
Parliament House
Alice and George Streets
Brisbane QLD 4000

Dear Mrs Miller

Please accept the Department of Natural Resources and Mines' submission in the Coal Workers' Pneumoconiosis (CWP) select committee's inquiry into the re-emergence of CWP in Queensland's coal industry.

When I appeared before the committee on 14 October 2016 I said that addressing the reappearance of CWP in Queensland's coal mining sector is the department's top priority. Since mid-2015, the department has devoted significant effort to doing so.

The department has focussed on the prevention of coal mine dust lung disease (CMDLD) – including CWP – through stricter dust management and improving the coal mine workers' health scheme through its work to operationalise all 18 recommendations of the independent Monash Review.

In accordance with the Minister's action plan on this issue, the department is determined to take a forward-focussed approach, yet recognising the need to address systemic failings of the past.

The department has been extensively consulting with stakeholders including worker representative groups, industry, the medical profession and government with a view to achieving a system that is supported across all sectors and provides the best possible protection for coal workers.

The department has striven to maintain progress of this work while also devoting a substantial amount of effort to responding to the CWP select committee's inquiry.

As I have said from the outset, the department supports the work of the committee and is committed to assisting the committee as best it can.

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In preparing this submission, and in responding to the questions of the committee in hearings and the committee's other requests for information, the department has made best efforts to locate historical documents and information.

Some of the information that has been requested by the committee dates back over 30 years in time and exists in the records of entities other than the department, or its predecessors.

Accessing and interrogating this information to ensure it meets the committee's requirements necessarily involves significant time and effort. I therefore am grateful for the committee's understanding in receiving this information.

I note that the committee has taken an interest in matters of past policy or decision-making underpinning past policy – including decisions of the Queensland Coal Board and previous governments from the early 1980s.

Given the passage of time and intervening events, much of the decision-making and the reasons behind it are not within the personal knowledge of present departmental officers.

Although the department has endeavoured to shed as much light as possible where it can on these matters, consistent with the standing orders it can of course only provide factual and technical background to government legislation and administration.

Also, as recognised in the standing orders it is not for the department to defend or advocate government policy. In any event I consider this practically impossible in circumstances where the policy in question traverses a number of administrations.

I trust that the department's submission assists the committee in its consideration of the issues relevant to the inquiry's terms of reference.

The department will continue to support the important work of the committee and will continue to commit its attention to the prevention of CMDLD.

Should you have any further enquiries, please contact Robert Djukic, Director, Coal Workers' Pneumoconiosis Inquiry Unit, Department of Natural Resources and Mines on telephone 3199 8035.

Yours sincerely,

James Purtill
Director-General

Submission to the Coal Workers' Pneumoconiosis Select Committee

Department of Natural Resources and Mines

9 December 2016

This publication has been compiled by the Coal Mine Workers' Health Scheme of Minerals and Energy Resources Division, Department of Natural Resources and Mines.

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Introduction

The Department of Natural Resources and Mines (DNRM) is committed to the health and safety of all coal mine workers. It is actively working to prevent coal mine dust lung diseases (CMDLD) – including coal workers' pneumoconiosis (CWP) – through stricter dust management and improving the respiratory component of the Coal Mine Workers' Health Scheme (the Health Scheme) to ensure the early detection of diseases through effective health screening.

DNRM acknowledges the seriousness of CWP, is committed to implementing improvements to safeguard the health and safety of coal mine workers and welcomes the opportunity to make a submission to the Coal Workers' Pneumoconiosis Select Committee. The department fully supports the committee's work, and will continue to make all efforts to assist the committee.

DNRM also acknowledges the key findings of the independent expert review of the respiratory component of the Health Scheme undertaken by the Centre for Occupational and Environmental Health at Monash University (Monash review). DNRM supports all 18 recommendations from the review and is currently working to operationalise those recommendations.

While acknowledging that there is still much work to do, a number of key improvements have already been implemented. All chest X-rays taken under the Health Scheme are now dual read using the International Labour Organization (ILO) International Classification of Radiographs of Pneumoconioses (ILO classification). Recent regulatory amendments that take effect on 1 January 2017 will prescribe the reporting of respirable coal dust levels and ensure all coal mine workers, both underground and aboveground, are getting regular chest X-rays to screen for CMDLD.

This submission seeks to:

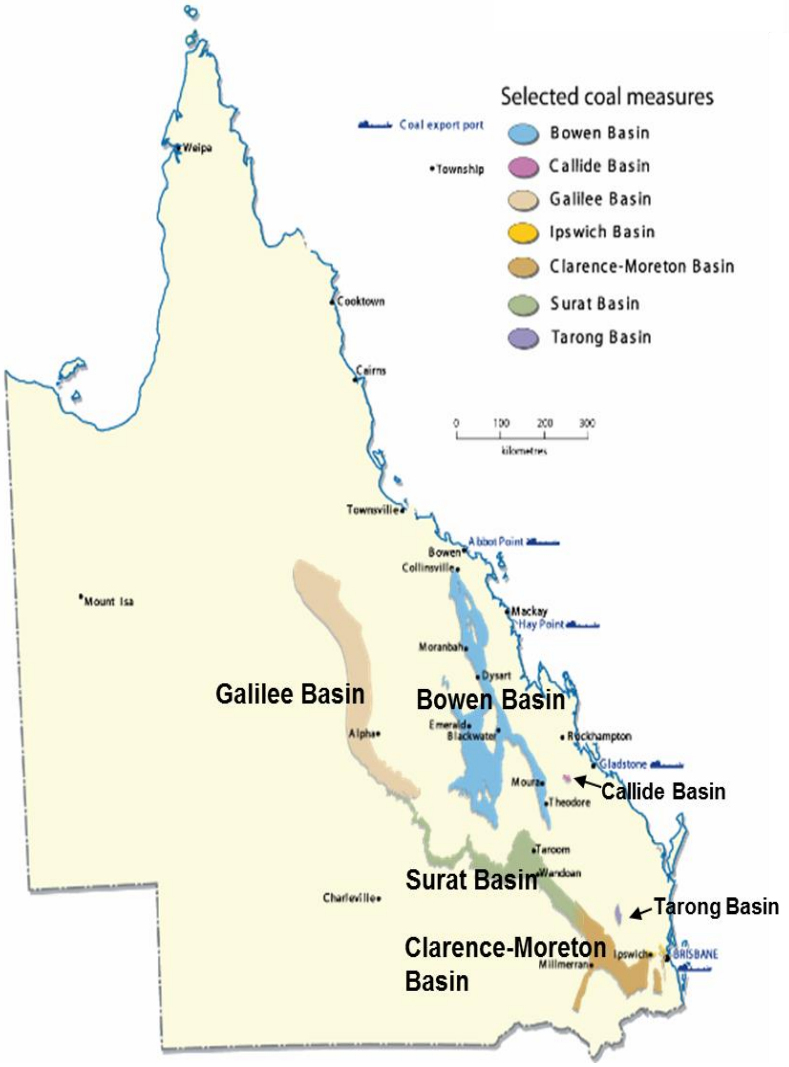
- address key issues relating to respirable dust management, the administration of the Health Scheme and how the department is working to operationalise the Monash review recommendations
- clarify a number of issues raised in written and oral submissions to the inquiry (a summary of the key issues from each written submission – with departmental comment – is provided in Annex A).

Queensland coal industry

Overview

Queensland has a rich endowment of high-quality coal – including both metallurgical and thermal coals. Since coal was first discovered in Queensland in 1825 by Major Edmond Lockyer in the Ipswich region the industry has grown to be globally significant. Currently, there are 50 operating coal mines, including 11 underground and 39 open-cut. The coal industry contributed $1.6 billion in royalties to Queensland in 2015-16 – representing 79 per cent of total royalties from mining, petroleum and gas sectors and over 10 per cent of the State's total taxation and royalty revenue.

Coal basins in the southeast of the state are sources of thermal coal for both export and domestic markets. There are seven open-cut mines currently operating in these basins.



90% of Queensland coal is produced from the Bowen Basin and is generally low in moisture, ash and sulphur content. Coal seams within the central and northern Bowen Basin often contain significant amounts of methane gas, which represents a hazard to mining operations and is removed to a safe level prior to mining.

Historical context

In 1950 coal production in Queensland was just over 2.3 million tons (Mt) of which 80 per cent came from underground mines (virtually all worked by hand). Most of the mines operated in the Ipswich Coalfield west of Brisbane where there were 84 underground operations. The remaining production came from two open-cut mines – Blair Athol and Callide.

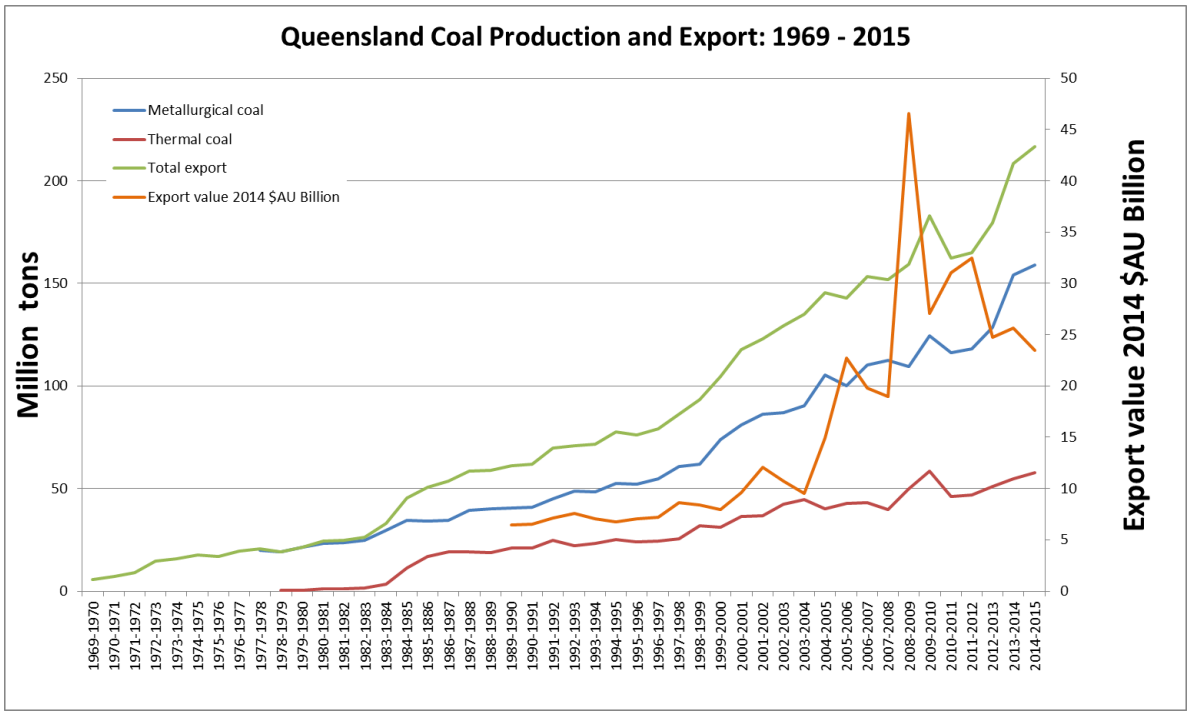
A period of major production growth began in 1959 with the establishment of large scale open-cut export mines in the south-east Bowen Basin. Underground mining was also initiated in the Blackwater district in the late 1960s and early 1970s. The first continuous mining machine to be used

underground in Queensland was installed at Box Flat No.5 Mine in the Ipswich Coalfield around 1960. In June 1986, the first mechanised longwall mining unit to operate in Queensland was installed underground at Central Colliery on the German Creek mining leases.

Mechanised longwall equipment is now the preferred technique and as it can deliver high production rates and has been installed in almost all underground mines developed in Queensland. Two mines additionally use the *top coal caving* method to extract thicker coal seams.

Mechanisation, driven by growth in coal-fired power generation and steel making has led to an increase in coal production. In 1975-76 coal exports were 16.4 Mt per annum compared to nearly 218 Mt exported in 2014 - 15 (160 Mt of metallurgical coal and 58 Mt of thermal coal). The figure below shows Queensland coal production and exports from 1969 - 2015.

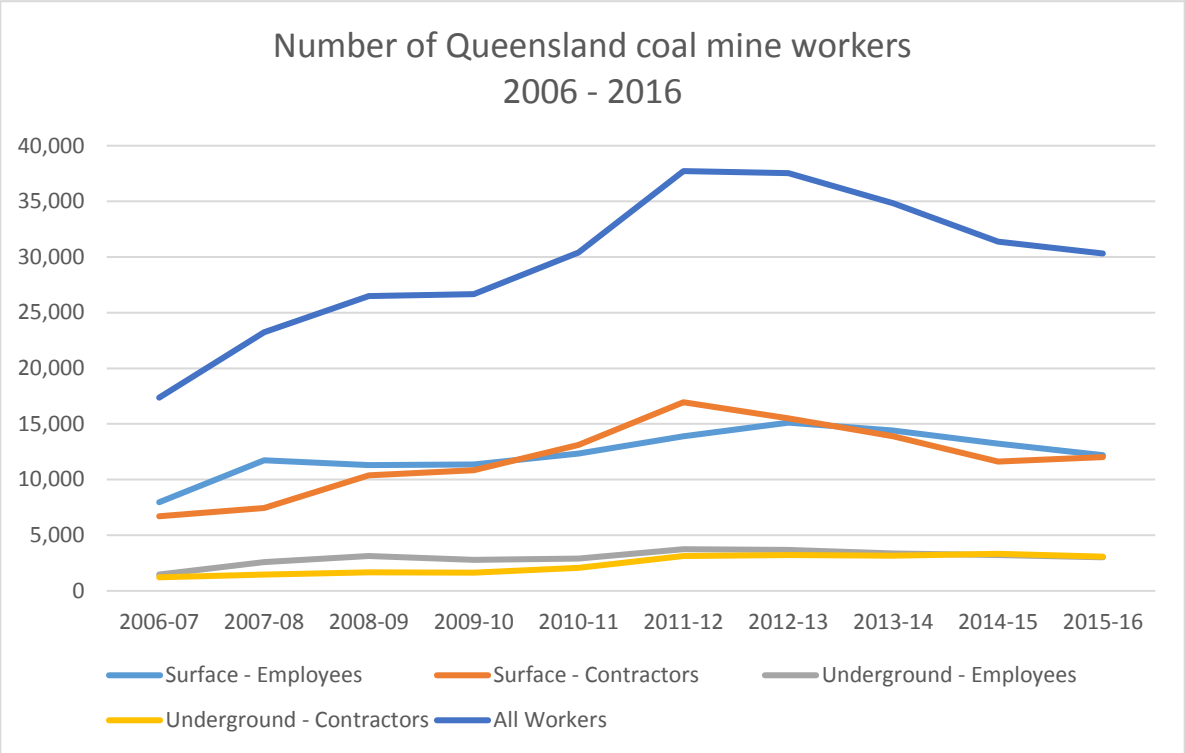
A more detailed summary of the Queensland coal industry and its history, geological context and production is provided in **Annex B.**



Workforce

The coal mining workforce in Queensland is currently around 30,000 workers. Approximately 25,000 (83 per cent) work in surface mines and about 5,000 work underground. The total number of coal mine workers doubled in the six year period from 2006-07 to 2011-12, due to industrial growth in steel-making, before declining steadily. This decline is due to a combination of factors including a downturn in the industry and increased mechanisation of mining operations - resulting in fewer workers per unit of coal production. While the number of contractors has increased, the proportion of employees to

contractors has remained relatively stable over the decade across surface and underground mines as shown in the following figure.



Coal Mine Dust Lung Diseases (CMDLDs)

Coal miners are at risk of developing a range of occupational dust lung diseases as a result of long term exposure to high levels of respirable coal and silica dust. Attributable conditions include coal workers' pneumoconiosis (CWP), mixed dust pneumoconiosis, silicosis, chronic bronchitis and emphysema or chronic obstructive pulmonary disease (COPD).

Confirmed CWP cases

As at 8 December 2016, the DNRM has confirmed 17 cases of CWP – with the last case confirmed on 24 November 2016. The department confirms a case when the department's occupational physician confirms the diagnosis of a coal worker by an appropriately qualified medical practitioner – usually a respiratory or thoracic physician.

In summary:

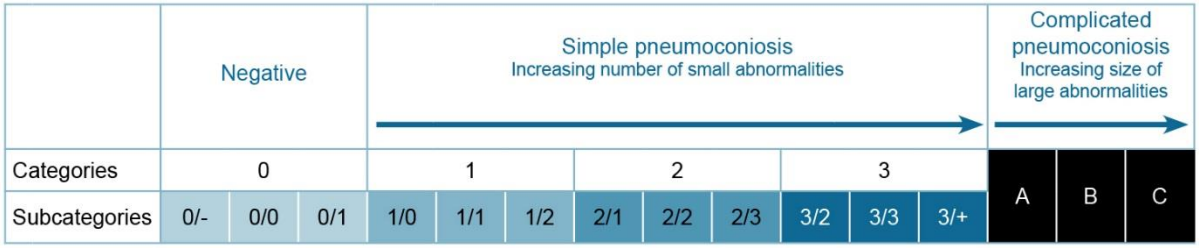
- 15 are described as simple pneumoconiosis
- 2 are described as complex (presenting with multiple conditions)
- Current ages range from 38 to 73 with an average age of 56
- 1 involves an aboveground worker with no underground experience
- 4 have substantial overseas coal mine experience (UK and USA)
- 2 worked in New South Wales as well as in Queensland
- 2 worked in the Ipswich coal fields
- All worked in Bowen Basin coal fields at some point in their careers.

ILO classification

The International Labour Organization (ILO) Classification of Radiographs of Pneumoconioses is a tool used globally to describe abnormalities in chest X-rays that indicate pneumoconiosis. The system includes guidelines and a set of 22 standard chest X-ray images. The radiologist compares the patient's chest X-ray with the 22 standard chest X-ray images in the set which show a gradation of severity in lung abnormalities (i.e. size and shape of nodules) in patients with pneumoconiosis. The radiologist uses the standard images to classify the pneumoconiosis present in the patient.

The ILO classification uses a scale of categories aligned to the standard images to describe the increasing concentration of small areas visible on the X-ray that may indicate an abnormality (opacities). As CWP can be a progressive disease, the ILO classification is used to identify and explain the progression of the disease.

ILO international classification of radiographs[1]



Stages

There are two stages of the disease: simple (early stage); and complicated CWP, also known as progressive massive fibrosis (PMF).

In the early stage of the disease, small scars called nodules between 1 – 2 millimetres in size, begin to form. A chest X-ray identifies the profusion of these round or irregular nodules to determine how advanced the disease is. It may be difficult to differentiate small nodules from other lung conditions, or even other normal structures in the lungs such as blood vessels. Small nodules from dust begin as Category 1 and over time and with enough dust exposure, they can increase in numbers to become a Category 2 and then Category 3. A higher category usually means more of the lung is damaged from these small nodules.

Individuals with early-stage CWP may show no symptoms, however typical symptoms can include cough, sputum production, wheezing, and shortness of breath. If the disease progresses it may become complicated CWP, which is also known as Progressive Massive Fibrosis (PMF). Areas of fibrotic or scar tissue in the lungs is observed to be greater than one centimetre in diameter. PMF may be debilitating and can be a life-threatening condition, and individuals may present with more severe symptoms.

Treatment

There is no specific treatment for CWP aside from managing the symptoms. The scarring of the lungs cannot be reversed. Workers diagnosed with the disease should avoid further exposure to high concentrations of coal dust.

[1] ILO classification table based on information provided by Professor Bob Cohen, Clinical Professor of Environmental and Occupational Health Sciences, University of Illinois at Chicago

Prevention of disease

All forms of CMDLDs – including CWP – are caused by long term exposure to high levels of respirable dust. Effective control of respirable dust is the most effective way to prevent these diseases. Control of respirable dust in coal mines is regulated under the *Coal Mining Safety and Regulation 2001* through the mine's safety and health management system.

Risk-based legislation

The *Coal Mining Safety and Health Act 1999* was the outcome of an extensive tripartite process between government, industry and union over the six years, following the 1994 Moura No. 2 mining disaster where it was agreed that the best legislative framework for mine safety and health was one that places responsibility and accountability for safety and health on the mining industry itself.

The new framework introduced a risk-based safety and health management system for each mining operation. These systems are central to the Queensland safety and health framework and incorporate risk management practices that ensure the safety and health of coal mine workers and persons who may be affected by mining operations.

Under the framework, mine operators are required to proactively review their safety and health management system to ensure the system is effective, and adapts to the changing environment and interdependencies of complex mining operations.

The Queensland framework enables statutory officers such as the mine's Site Senior Executive (SSE), Site Safety and Health Representative (SSHR), Industry Safety and Health Representative (ISHR), mines inspectors, authorised officers and mine workers to play a proactive role in reviewing, inspecting or auditing the safety and health management system. This proactive review by a wide range of people with differing expertise and perspectives strengthens the integrity of the safety management system and safeguards against potential risk exposure not being addressed.

Dust control

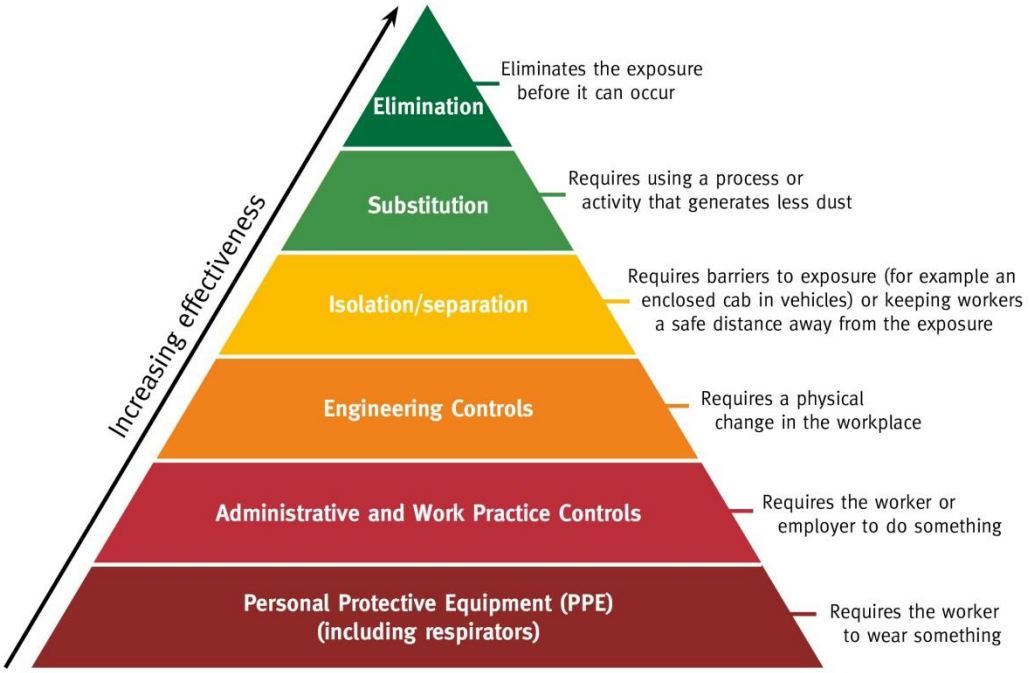
The best way to prevent CMDLD is to implement effective dust control procedures. Under section 89 of the *Coal Mining Safety and Health Regulation 2001,* mines must ensure each coal mine worker's exposure to respirable dust at the mine is kept to an acceptable level and the average concentration of coal and silica dust in the atmosphere in which the worker breathes does not exceed 3mg/m^3 air and 0.1mg/m^3 air respectively[2].

Effective dust control procedures can vary from mine to mine and it is the responsibility of the mine's SSE to determine the most effective method for dust control at that mine following risk assessment and ongoing monitoring. The accepted industry standard for achieving an acceptable level of risk is by working through the hierarchy of control. It stipulates that best and most effective protection from harm is through *elimination* – that is by preventing the hazard from occurring in the first place. If

[2] The worker is not to breath an atmosphere at the mine containing respirable dust exceeding an average concentration, calculated under AS2985, equivalent for an 8-hour period – see section 89 of the Coal Mining Safety and Health Regulation 2001.

elimination is not reasonably practicable, risk must be minimised by working through the alternatives in the hierarchy, from the highest to the lowest.

Hierarchy of control



Below are examples of how a mine can apply the hierarchy of controls to effectively manage the risk of respirable dust and silica generation and exposure.

Control measure	Example
Elimination	Automation of mining in areas of high risk of respirable dust and silica exposure
Substitution	Using mining methods that generate less respirable dust
Isolation/separation	Use of curtains, enclosures, containment
Engineering controls	Dust suppression sprays
Administration	Task rotation, use of procedures to limit exposure, including operator positioning
Personal protective equipment	Any use of respiratory personal protection, including self-contained or compressed air breathing apparatus

While personal protective equipment is an important part of reducing exposure to dust, the mine's focus should be to ensure high level controls are implemented to ensure respirable dust levels are below prescribed levels. Mine operators determine personal protective equipment requirements on a site-by-site basis based on risk assessment under the coal mine's safety and health management

system. Respiratory protective equipment is an example of personal protective equipment that mines may use to protect the health of their workers. If respirators are used, it is essential that:

- the type of respirator selected is able to filter the size of dust particle and concentration of dust
- the facial seal of the respirator prevents dust from entering the breathing zone of the person
- respirators are regularly inspected and maintained
- the wearing of respirators is enforced by supervision
- should be used as part of a respiratory protection program established in accordance with *AS1715: 2009 Selection use and maintenance of respiratory protective equipment*.

The department's Mines Inspectorate works with industry and union representatives to ensure mines achieve an acceptable level of risk.

Role of the Mines Inspectorate

The Mines Inspectorate's role is to ensure that acceptable safety and health standards are established and practiced within the mining and quarrying industries. The Mines Inspectorate works with industry and union representatives to regulate and improve safety and health at mine sites and to address issues that arise, such as workers being exposed to excessive respirable coal dust.

The functions and powers of coal mine inspectors are set out in the *Coal Mining Safety and Health Act 1999*. The Mines Inspectorate's compliance policy[3] explains how it promotes and achieves compliance with the legislation.

As part of its ongoing program of work, and in relation to respirable dust management and control, the Mines Inspectorate inspects and audits mine sites, their procedures and monitoring results, and presents to industry, workers and union representatives on the importance of dust control and monitoring (see page 16). Mines inspectors also issue directives to mines requiring them to rectify deficiencies identified through inspection and demonstrate an acceptable level of risk. The Mines Inspectorate has also used dust sampling data from mines to inform its regulatory activities.

Resourcing

There are 21 mines inspectors for the coal sector across four offices in central and southern Queensland, including staff who are qualified in electrical engineering (5), mechanical engineering (4) and occupational hygiene (1).

The department has an occupational physician who provides expert medical advice and is one of a number of inspectors and officers responsible for the identification and assessment of occupational health hazard at mine sites.

[3] https://www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/legislation-standards-guidelines

Appointed inspectors possess a range of vocational and tertiary qualifications, dependent on the need at the time they were recruited. Qualifications held by inspectors include; first or second class certificates of competency, underground mine managers certificate, open-cut examiner certificates, mining engineering degrees, electrical engineering degrees or diplomas, mechanical engineering degrees or diplomas, post graduate studies and professional certification in occupational hygiene or ergonomist qualifications.

To ensure inspectors develop their skills and understanding of the issues facing the industry, an ongoing program of continuous professional development is undertaken. During 2015-16, around 40 different training courses were delivered to inspectors.

Also within DNRM is the Safety in Mines Testing and Research Station (SIMTARS). It is a resource available to government, mining companies, mining equipment manufacturers and suppliers to the mining industry.

SIMTARS supports the Mines Inspectorate through provision of expert advice and assistance with accident investigations. It is also an accredited Registered Training Organisation and provides nationally recognised training and qualifications in mine safety to thousands of mine workers in Australia and overseas.

SIMTARS is a major provider of occupational hygiene sampling and monitoring services. These services include respirable dust sampling and monitoring for coal mines. In performing these services, SIMTARS operates as a commercial entity contracting with mine operating companies – separate and independent from the Mines Inspectorate.

Independence

Regulating the safety and health of the mining industry requires highly skilled and experienced inspectors. For this reason, all of the inspectors have significant industry experience appropriate to their field of expertise. Inspectors who have worked in industry, especially those with recent experience, have valuable knowledge and skills of mining operations including experience with the latest technology and mining practices and firsthand experience of the hazards in mining and how they can be effectively managed.

The Mines Inspectorate is aware that the requirement to have appropriately skilled and experienced inspectors can raise concerns of regulatory capture – defined as the undue influence of industry or other stakeholder priorities over those of the public good. This is a common risk for all regulators, and the department has strategies in place to manage this risk. A newly appointed inspector will not be assigned to inspect or audit the mine at which they previously worked for a period of at least six months. After this period it will be up to the regional inspectors to allocate the audit and inspection work as identified in the Inspectorate's Mining Inspection Planning System. Inspectors are not allocated responsibility for specific mines.

The Mines Inspectorate also provides training to inspectors to ensure awareness and mitigate the risk of regulatory capture. In addition to training for technical skills, inspectors are required to undertake code of conduct, complaints management and public sector ethics training. Some inspectors also

attend a course on ethical decision making. The courses dealing with complaints management, public sector ethics and ethical decision making are provided by the Queensland Ombudsman.

There are checks and balances built into the Act to ensure the regulator performs its role effectively. SSHRs and ISHRs are statutory positions provided for under the Act to help ensure the level of risk to coal mine workers is at an acceptable level. These roles assist the Inspectorate in fulfilling its obligations.

An SSHR is a coal mine worker who has been elected by fellow workers at the mine to carryout mine inspections, review procedures, detect unsafe practices and to investigate complaints from workers. If SSHRs identify a concern during an inspection he or she must notify the mine's SSE and send a report to the Mines Inspectorate. The Mines Inspectorate interviews the SSHR; conducts any necessary follow up which could include additional investigations; meets with site personnel; and records the resolution of issue in the Mine Record Entry.

An ISHR is appointed by the union to carry out safety and health functions at mine sites. In addition to the functions of SSHRs, ISHRs also participate in investigations into serious accidents and high potential incidents and help in relation to initiatives to improve safety and health at coal mines.

Both SSHRs and ISHRs are required to advise the SSE if they believe the mine's safety and health management system is inadequate or ineffective. If the representative is not satisfied the SSE is taking action to rectify the issue, the representative must advise an inspector who must investigate the matter and report the results of the investigation. Both SSHRs and ISHRs have the power to order the suspension of operations.

The Act also establishes a Commissioner for Mine Safety and Health. Acting independent of the inspectorate, the Commissioner's role is to:

- advise the Minister for Natural Resources and Mines of mine safety and health matters generally
- fulfil the roles of chairperson of the Coal Mining Safety and Health Advisory Committee (CMSHAC)
- monitor and report to the Minister and to Parliament on the administration of provisions about safety and health
- perform the functions given to the Commissioner under the *Coal Mining Safety and Health Act 1999*

The Coal Mining Safety and Health Advisory Committee is a statutory committee that provides advice to the Minister in relation to the safety and health of coal mine workers. The committee includes representatives of industry, unions and government and has been tasked with oversighting the reform of the Health Scheme and is actively engaged in the progress of these reforms.

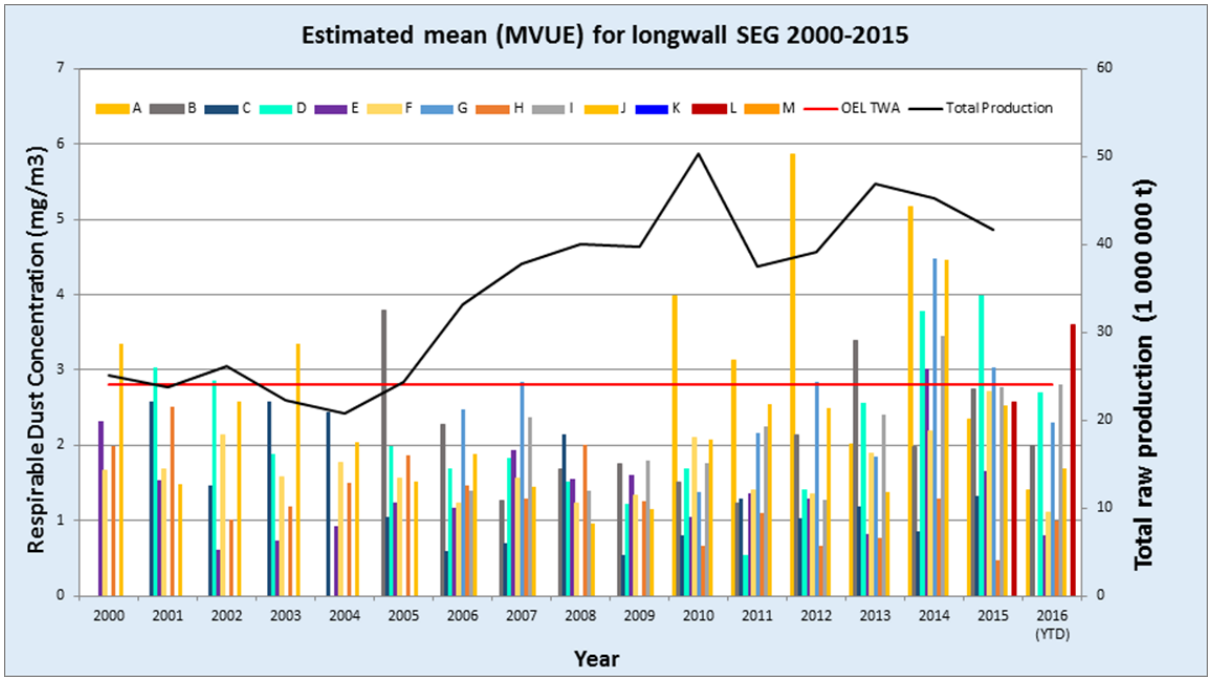
Mines Inspectorate's activity in dust management

The Mines Inspectorate regulates respirable coal dust levels utilising a range of compliance tools. It also focuses on other important occupational health hazards including: exposure to diesel particulate matter, respirable crystalline silica dust and polymeric chemicals. Key activities in recent times are described in the following table.

The inspectorate issued its first directive relating to respirable coal dust in 2013. Prior to this date, there were no concerns raised with the Mines Inspectorate about respirable dust. This is despite concerns about cases of CWP in the United States being raised with CMSHAC in early 2013.

Timeline	Activity
2008	Presentation to SSHRs on dust monitoring programs and the importance of dust monitoring. This was part of a training program for SSHRs to assist them in their roles.
2009	Co-ordinated an assessment of managing hazards associated with airborne dust and gathered information on reporting and monitoring programs.
2010	Released a report giving guidance on the control of airborne dust hazards, the reporting and monitoring programs and the establishment of similar exposure groups (SEGs).
	Presented to SSHRs on conducting inspections in surface coal mines pertaining to dust. Presented to SSHRs on dust control technology for mobile equipment cabins. This was part of a training program for SSHRs to assist in their roles.
2013	Presented a number of occupational health issues to CMSHAC including dust exposure in coal mines. A key message of the presentation was the need to remain vigilant in controlling dust.
	First Queensland mine introduced longwall top coal caving.
	Mines Inspectorate asked this mine to provide dust data due to concerns the new technology may generate more dust than conventional longwall mining.
	Mine unable to keep dust levels below adjusted regulatory limit and the Mines Inspectorate issued two directives to address the issue.
2014	Second mine introduced longwall top coal caving technology.
	Directive issued to this mine to reduce dust levels below adjusted regulatory limit.
	In September, all underground coal mines were requested to provide dust monitoring data covering the period 2012-14 after results at some conventional longwall mines showed respirable coal dust concentration levels were higher than the regulatory limit.
	Further directives were issued.

Timeline	Activity
	Chief Inspector of Coal Mines provided address to industry leaders raising Mines Inspectorate's concerns about respirable dust management.
2015	In October another review of underground dust data was completed.
	Further directives issued.
	At separate forums, dust monitoring data collected was presented to SSHRs and industry leaders where the importance of dust control and monitoring was emphasised and awareness on the compliance actions the Mines Inspectorate took.
	A safety alert was published regarding preventing dust-related lung diseases and recommended that mines audit and review their dust control measures.
2016	Inspectors provided information on respirable dust management at Explosion Risk Zone controller forums conducted at multiple locations across the Bowen Basin.
	In January all underground coal mines were requested to provide dust monitoring data for the period 2000-11.
	Following analysis the Mines Inspectorate combined this data with the data received for 2012-14 and presented it at the annual Queensland Mining Industry Health and Safety Conference in August 2016 (see below showing de-identified mine results for longwall worker exposure).
	Further directives issued.



The Figure above shows the mean respirable dust concentration measured for workers in the longwall production area – termed the similar exposure group (SEG) over the sixteen year period 2000-15.

The data show that for the period 2000-13, 10 per cent of longwall SEGs were equal to or greater than the adjusted regulatory exposure limit. For the year 2014, 60 per cent of longwall SEGs were equal to or greater than the adjusted regulatory exposure limit. This number fell to 18 per cent of mines longwall SEGs equal to or greater than the adjusted regulatory limit, in the year 2015.

The longwall production area represents the highest risk group with respect to respirable coal dust exposure and as such has been the primary focus of the Mines Inspectorates field based inspection activities and compliance regime.

Site inspections

Inspectors and inspection officers have the power to enter and inspect or audit mines under the *Coal Mining Safety and Health Act 1999*.

An inspection may be undertaken with or without prior notice depending on the purpose of the visit and the issue at hand. When notice is given, generally this is because it enables a mine site to make available key personnel and prepare necessary information about the safety and health management system for the inspector ahead of time to make the best use of time. It is also a requirement of the Mines Inspectorate's Mine Record Entry System to notify the workers' elected SSHR to provide them the opportunity to attend the inspection. Union representatives/ISHRs are also given the opportunity to accompany the inspector on inspections and they do frequently.

During the Select Committee's hearings, concerns have been raised that notifying the mine of an upcoming inspection will allow time for the mine to improve conditions of a mine in advance. While this could occur, in practice it is difficult for mines to achieve this. Inspectors are trained to identify risks, audit systems and to conduct interviews and investigations. When an inspector visits a mine they will review the safety and health management system and then test the system at the mine to look for evidence of the system being in place and to test its adequacy. Inspectors will also interview workers and management at the mine to learn about when the procedure was implemented or updated and how the procedure is implemented.

The following table summarises the number of inspections that have occurred during 2011 to 2016. [4]

	2011-12	2012-13	2013-14	2014-15	2015-16
Inspections - announced	1,387	1,451	1,487	1,431	1,598
Inspections – unannounced	136	127	135	102	162

[4] The figures for inspections have been taken from the Queensland Mines and Quarries – Safety Performance and Health Report 2015-16 (Safety Performance and Health Report). These figures may be different to the figures reported in the Commissioner for Mine Safety and Health – Queensland Mines Inspectorate Annual Performance Reports (Commissioner's report) as the Safety Performance and Health Report is finalised after publication of the Commissioner's report, based on an updated dataset. The figures for audits have been taken from the Commissioner's reports.

	2011-12	2012-13	2013-14	2014-15	2015-16
Inspections – weekend or backshift	8	13	12	10	17
Inspections – unannounced weekend or backshift	12	11	7	2	4
Audits	56	33	67	70	32

As detailed above, there were 1,781 inspections and 35 audits completed in 2015-16. The inspections undertaken included 103 inspections that related in some way to respirable dust in coal mines. Most of the 35 audits undertaken were concerning metalliferous mines or quarries, however four of the audits were of coal mines and three of these were to address dust concerns.

Audits are triggered from a number of sources ranging from the occurrence of high potential incidents or accidents through to scheduled audits that have arisen from site inspection outcomes. A reduction in audit numbers in 2015-16 from the previous year is largely due to Inspectors being focused on dust management. The reduction from the previous year is also due to 142 more inspection days, and 59 more complaint investigation days being utilised than in the previous financial year.

Site inspections may also occur as a result from notification of an issue, which is generally raised from union or workers. The timeframe for responding to such notifications varies depending on the issue. Serious matters are investigated immediately. Likewise, it depends of the severity of the issue as to whether the Mines Inspector will notify the mine site of the inspection when an issue has been brought to the Inspector's attention.

Regulatory role and compliance action

DNRM's compliance policy identifies a range of compliance options the Mines Inspectorate can use to enforce compliance. Options include issuing a directive, directing the SSE and the company's senior management to attend a compliance meeting and prosecution. The Mines Inspectorate will determine the most appropriate course of action on a case-by-case basis and follow a number of steps as outlined in the policy.

Prosecutions have a place in compliance and enforcement however, in responding to dust issues immediate and definitive action is more effective in preventing worker exposure to respirable dust. Given the delays and uncertainty inherent to prosecutions, it is considered to be less effective than other compliance powers provided to inspectors under the Act. However, prosecution is always an option that is considered in determining what compliance action is appropriate to be taken in any particular instance of alleged non-compliance. The decision on which compliance option is more appropriate will always be made in consideration of the specific circumstances.

Since 2013, the Mines Inspectorate has issued 38 directives to nine underground coal mines in relation to dust, including requiring a mine to review its safety and health management system, review the effectiveness of dust controls, reduce cutting speed and suspend operations on two occasions.

Suspending operations may seem like an intuitive option to bring dust concentration levels below 3mg/m^3 but the Mines Inspectorate must consider the many other hazards present at a mine site, especially for longwall operations, such as gas management, spontaneous combustion and geotechnical/strata problems before directing a mine to suspend operations. In some cases the safest option may be to allow a mine to complete its production activities on a longwall panel before suspending the operation to address dust levels.

When the Mines Inspectorate issues a directive a mine will be required to address the matters outlined in the directive by a certain date. If a mine does not achieve compliance by the due date the SSE will attend a compliance meeting with the Mines Inspectorate to present data and explain why the directive could not been met. If an extension is provided, conditions may be placed on the mine, including increased monitoring frequency and regular updates to the District Inspector. This will include a review of respirable dust exposure data and the mines progress against key milestones. Extending a directive does not in any way reflect a relaxing of enforcement action; rather it is an escalation of the process.

If compliance has not been achieved by the extension date, the SSE and an operator's representative must meet with the Chief Inspector. The SSE must provide a commitment to the Chief Inspector to achieve compliance by an agreed date. The Chief Inspector will outline the options available to the Mines Inspectorate if compliance is not achieved by the due date. The options could include issuing a directive to reduce shearer speed, to reduce exposure time of key personnel and hours cutting (until compliance demonstrated) and to stop production until appropriate actions are implemented.

On other occasions the Mines Inspectorate may choose to extend the directive because the mine is not at full production and therefore cannot provide results to the Inspectorate showing dust levels at full production. For example, the Mines Inspectorate has kept a directive open even though the results of monitoring showed the dust levels at the mine was below 3mg/m^3. This is because the mine has not been in full production during this period.

There may be occasions where mines achieve compliance by the due date but the Inspectorate will keep the directive open to continue monitoring the mine's dust levels to ensure sustained compliance. The Mines Inspectorate will not close a directive based on one set of compliant data. Generally, the Mines Inspectorate requires sustained compliance dust data for three months before the directive is closed. In one case, a mine under a directive has provided data for two months demonstrating compliance but have not for the third month because there has been no production activity. In this case the directive remains open.

Directives and compliance meetings are demonstrated effective ways to achieve an immediate response from mines and to enforce compliance. While the Mines Inspectorate can also prosecute mines for breaching safety and health obligations, such as failing to ensure the occupational exposure limit is not exceeded, this option is not considered to be the most effective compliance tool in the case of managing dust. Prosecution is a lengthy process that does not address the immediate problem and will divert the Mines Inspectorate and the mines' resources from addressing the issue at hand.

Issuing directives and taking mines through a compliance process requires immediate response from the mine aimed at correcting the deficiency and changing behaviour. It requires the mine to focus its attention and resources on minimising risk to workers.

Issuing directives can be an effective means of deterring substandard safety practice as their implementation can have a significant financial impact on the mine. For example, a directive may call for engineering modifications requiring significant expenditure. The impacts on cash flow and lost revenue where operations are slowed or suspended can also be significant. By contrast, if a mine were to be prosecuted for breaching a safety and health obligation, the maximum penalty is currently $91,425.

Dust monitoring

Dust exposure levels

According to Safe Work Australia, "workplace exposure standards are airborne concentrations of a particular chemical or substance in the workers' breathing zone that should not cause adverse health effects or cause undue discomfort to nearly all workers. Exposure standards are legal concentration limits that must be adhered to."[5]

Respirable dust, as outlined by Safe Work Australia, has a time-weighted average (TWA) occupational exposure standard. Safe Work Australia and the Australian Institute of Occupational Hygienists define that a TWA exposure standard is applied to long term exposure to a substance over an eight hour work shift (with a consequent 16 hour break between successive shifts), for a five-day working week, over an entire working life. It is these work patterns for which most epidemiological studies are available and upon which the exposure standards are determined.[6]

In Queensland, under section 89 of the Coal Mining Safety and Health Regulation, coal mines must ensure respirable coal dust in the atmosphere does not exceed an average concentration of 3 milligrams per cubic metre (3mg/m^3) for an eight hour period calculated under Australian Standard 2985: Workplace atmospheres – method for sampling and gravimetric determination of respirable dust. This is based on the workplace exposure standards set by Safe Work Australia.

Section 89 also requires mines to adjust the occupational exposure limit for longer shift cycles so that the person's dosage of respirable dust is not more than the equivalent dosage for a person working an eight hour shift. The most common adjusted exposure limit used in Queensland coal mines is 2.8 mg/m^3.

Requirements for dust monitoring

Queensland has a risk based approach to determine sampling frequency but amendments to the regulation commencing on 1 January 2017, will prescribe the minimum frequency for two high risk

[5] http://www.safeworkaustralia.gov.au/sites/swa/whs-information/hazardous-chemicals/exposure-standards/pages/airborne-contaminants
[6] https://www.aioh.org.au/documents/item/14

similar exposure groups in the longwall and development production areas. The sampling represents leading practice in occupational health.

Legislation requires that Queensland mines must carry out respirable dust monitoring in accordance with Australian Standard (AS2985). This standard requires gravimetric sampling with size selective cyclone to capture only the respirable dust fraction, which is less than 10 microns in diameter. Gravimetric sampling require filters to be weighed in an accredited laboratory, the results of which may take up to two weeks to be received by the mine.

Real time monitoring

Real time monitoring is extensively used in underground mines in the United States and South Africa but the technology has not been deemed IECEx[7] approved as intrinsically safe for use in Australian mines. Before a piece of equipment, technology or machinery can be used in an underground coal mine in Queensland it must be deemed intrinsically safe. That is, it will not be a source of ignition either through creating a spark or a hot surface in an environment where the presence of methane can create an explosive atmosphere. As noted in the overview of the coal industry, many of the underground coal mines in the Bowen Basin contain methane gas, which must be removed in order to ensure safe mining operations. Removal of methane gas is achieved by de-watering (pumping water out of the coal seams). This has the effect of removing moisture from the coal, which can make it more prone to dust generation during production (cutting and transportation).

While there are benefits of real time monitoring, the limitations of real-time monitoring devices must be acknowledged and understood when employed to measure dust concentrations. The most important limitation of real-time monitoring relates to the way direct reading instruments calculate the mass of the particles being sampled. For example, a common direct reading instrument such as a laser photometer counts the number of aerosol particles in a sample of air. The mass of the aerosol particles is then calculated based on the properties of the calibration aerosol and converted to a dust concentration measurement based on the volume of the air sampled.

Another form of direct reading instrument is the tapered element oscillating microbalance (TEOM) which is now commonly used technology overseas for personal dust monitors. The mass of aerosol particles is calculated by monitoring the frequency changes in a vibrating tapered element. Again this mass is then converted to a dust concentration measurement based on the volume of air sampled.

Neither laser photometry nor TEOM determine mass gravimetrically in accordance with AS2985. Therefore, measurements from these devices cannot be used to assess compliance with exposure limits and are indicative only.

Manufacturers and mining companies are working with SIMTARS to review and test products for intrinsic safety. A new unit that meets IECEx standards is expected to be 2-3 years away.

[7] International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres (IECEx System)

Difference between Queensland and NSW

Prior to 2005, NSW also had a respirable dust limit of 3mg/m3. In 2004, AS2985 adopted a new sampling curve which required a change in the required sampling flow rate from 1.9 L/min to 2.2 L /min. It is understood Coal Services NSW concluded that this increase in flow rate would result in a change to the measured dust concentration and potentially result in an underestimation of the actual airborne exposure. This prompted NSW mines inspectorate to reduce their coal dust exposure standard down to 2.5 mg/m^3. Unlike Queensland, NSW does not require the exposure limit to be shift adjusted.

Monitoring of respirable dust in Queensland and NSW must be conducted in accordance with AS2985 but there are differences in sampling methods, including the proportion of the shift for which the sampling device must be worn, the location where the sampling device is worn on the worker and the locations in the mine where sampling is to occur. Due to these differences direct comparisons between New South Wales and Queensland are misleading

Reviewing workplace exposure standards

In 2015, Safe Work Australia (SWA) commenced the process to review workplace exposure standards for more than 600 airborne contaminants. As part of early stakeholder consultation, the Queensland Mines Inspectorate completed an information request from SWA noting its support for the review and interest in contaminants present at mine sites.

In 2016, SWA engaged Golder Associates Pty Ltd to undertake the technical components of the review which includes respirable coal dust, crystalline silica, and diesel particulate matter. This review process is to ensure worker health and safety in Australia is comparable with latest evidence and international best practice. DNRM is supportive of this process and continues to work with SWA. Any changes to exposure standards in Queensland for respirable coal dust will be informed by SWA's findings.

Reporting of dust monitoring results

The regulation requires that a mine's safety and health management system must provide for the monitoring and recording of dust concentration levels. The results must be kept in a location that is easily accessible by each worker at the mine and the records must be kept for 30 years. Inspectors visiting a site often find the results posted on the mine's notice board and accessible by workers. The Mines Inspectorate has not been made aware of a situation where workers have not been notified of the dust monitoring results.

Actions to prevent disease

DNRM is putting in place a number of measures to strengthen respirable dust management requirements. The department has focussed its immediate attention on ensuring existing mines' respirable dust levels are within occupational exposure limit and at an acceptable level of risk, using the range of compliance tools discussed earlier in this submission.

Other measures include amendments to the regulatory framework, developing recognised standards on monitoring and controlling respirable dust and developing an occupational exposure database to enable surveillance and reporting.

Mandatory reporting

Amendments to the regulation have been developed together with employee and employer representatives. The changes, commencing on 1 January 2017, will strengthen respirable dust management requirements by requiring all coal mines to:

- regularly report dust monitoring records to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months
- advise inspectors every time dust concentrations exceed prescribed levels.

The amendments also outline the procedure to follow if dust concentration exceeds prescribed levels.

Respirable dust database

In preparation for commencement of the regulatory amendments, DNRM is developing a respirable dust database to enable surveillance and reporting. All coal mines (open cut and underground) will be required to report its quarterly dust data to the Mines Inspectorate.

DNRM will provide guidance material on how to submit personal respirable dust to the Mines Inspectorate. The database will enable the Mines Inspectorate to view compliance and industry trends as well as generate reports. CMSHAC will facilitate the review of the analysed reports generated from the quarterly records.

While the Mines Inspectorate currently publishes dust data in its annual report, it will publish quarterly data to increase the transparency and frequency of dust reporting.

Recognised standards

The Mines Inspectorate has been working with employee and employer representatives to develop two recognised standards for dust monitoring and control. While recognised standards are not mandatory they provide an acceptable way of meeting safety and health obligations in relation to a particular risk when followed. Mine operators may adopt other ways of managing risk, however, the methods adopted must be equivalent to, or better than, the way stated in the recognised standard. Subject to ministerial approval, it is anticipated that the recognised standard for *Monitoring respirable dust in coal mines* will be published in December 2016 and the standard for *Underground respirable dust control* will be published early 2017.

The dust monitoring standard will provide a standardised method for collecting respirable dust data. This will improve data quality and integrity and enable the Mines Inspectorate to oversee compliance with dust levels at the individual level, at the similar exposure group level, across an entire coal mining operation and across the coal mining industry – and take corrective action where needed.

The dust control standard aims to establish a systematic approach to the ongoing management and control of airborne dust, with significant input from sites who have effectively managed their levels of airborne respirable dust. It incorporates known principles of risk management, with an emphasis on a combination of engineering controls that have been shown to reduce airborne dust at a number of Queensland underground coal mines. The standard will focus on reducing the generation of airborne dust at the source and includes a number of elements for an overall comprehensive system to ensure the effectiveness of the dust control measures, and ongoing maintenance of controls.

Senate Select Committee on Health

On 28 April 2016, the Senate Select Committee on Health released its report on CWP. The report made 20 recommendations a number of which, particularly those relating to NMAs, are effectively being addressed through implementation of the Monash review recommendations. Other recommendations are addressed by the government's action on dust management as described previously in this section.

Early detection of disease

While the department is committed to ensuring that respirable dust levels are as low as reasonably possible, it is critical that the regulatory framework relating to dust management is supported by an effective respiratory screening program to ensure that any new cases of CMDLD are detected early and affected workers are removed from ongoing exposure to respirable dust.

Coal Mine Workers' Health Scheme

The Health Scheme aims to protect the health of Queensland coal mine workers by ensuring that all coal mine workers undergo periodic health assessments. The Health Scheme is regulated under chapter 2, part 6, division 2 of the *Coal Mining Safety and Health Regulation 2001*.

Historical context

In December 1982, the Queensland Coal Board authorised the development of a coal miners' health scheme. A program to survey, by chest X-ray and lung function test, all colliery employees in Queensland commenced on 1 January 1983.

The subsequent Rathus-Abrahams report recommended a permanent health scheme for coal miners, and based on this recommendation, the Queensland Coal Board introduced the new Coal Industry Employees Health Scheme in May 1993, which formed the basis of the current Health Scheme.

In 1983, health surveillance in the Queensland coal mining industry was focussed on pre-employment screening for respiratory conditions and lung disease. Chest X-rays were only compulsory for persons entering the industry.

The Queensland coal mining industry and the health monitoring of its workforce was managed by the Queensland Coal Board until its abolition in 1997-98. Responsibility for administering the health scheme was then assigned to DNRM.

Between 2002 and 2003, a tripartite working group was established, reporting to a steering committee of departmental executives, to investigate and make recommendations on future directions of health surveillance of mine workers.

This resulted in the preparation of a report[8] which made various recommendations about the coal mine workers' health scheme and the health surveillance unit (HSU). These included recommendations that:

- the principal role of the HSU be focussed on the collection and analysis of adverse health assessment data, reporting the findings to industry for preventive action and facilitating epidemiological and other research where appropriate

[8] Review of the Health Surveillance Unit, 2003 (attached)

- legislative amendments be progressed to facilitate this role and to impose duties on key personnel to ensure appropriate health surveillance
- medical practitioners be appointed with duties defined in regulation
- an occupational physician be appointed to support the HSU on a part-time basis, with a panel of medical practitioners with experience in the mining and quarrying industries to be appointed on a permanent part-time basis.

Although a part-time occupational physician was appointed in 2004, the other recommendations of the working group were not fully implemented.

The department is not aware, nor do departmental records explain, why the recommendations of the working group were not fully implemented.

Proposed Improvements

In 2013, DNRM released a regulatory impact statement (RIS) for consultation, which among other things proposed changes to the coal mine workers' health scheme. Some key features of the proposal were consistent with what would later be recommended in the Monash report. In summary, the RIS proposed:

> *Refocusing the Coal Mine Workers' Health Scheme to address the hazards such as dust and noise. This will enable the Mines Inspectorate to focus its efforts towards health surveillance activities to determine whether the work or the work environment at particular mines is harming the health of coal mine workers. In this way measures can be taken to address a hazard harming workers' health before it results in chronic illness.*[9]

The RIS also proposed a review of the qualifications and experience for medical practitioners and specific hazards as a focus of health surveillance[10]:

> *DNRM proposes to return the scheme to its original purpose, which was the health surveillance of those employed in the coal industry to ensure their health was not materially affected by their employment.*
>
> *DNRM instead should be concerning itself solely with a more simple health surveillance scheme to determine whether the work or the environment worked within are harming the short and long term health of coal mine workers.*
>
> *The regulator's concern is with the potential impact of mining work on workers and this is monitored through health surveillance assessments. The proposed health surveillance assessment will address health issues that historically have been affected by health hazards common to the industry, such as noise and dust.*

[9] Queensland's Mine Safety Framework Consultation Regulatory Impact Statement p. xiii (https://www.dnrm.qld.gov.au/__data/assets/pdf_file/0008/197369/mine-safety-framework-ris.pdf)
[10] Queensland's Mine Safety Framework Consultation Regulatory Impact Statement pp. 104-5

The assessment should include work history, a respiratory questionnaire, lung function tests, chest x-ray and audiometry.

These changes did not progress due to a lack of tripartite support.

All published responses to the RIS can be accessed at https://www.dnrm.qld.gov.au/our-department/corporate-information/policies-initiatives/mining-resources/legislative-reforms/qld-mine-safety-framework.

Screening requirements

The current Health Scheme requires all coal mine workers' (other than those workers employed for a low risk task) to undergo a health assessment prior to the start of their employment and then at least once every five years of their employment. These health assessments require lung function tests (spirometry) and, where there is a risk of dust exposure, chest X-rays. Medical examinations are performed under the supervision of a doctor engaged by the employer known as the Nominated Medical Adviser (NMA). Medical records are sent to DNRM for storage, and must be made available to the worker upon request.

NMAs ordering chest X-rays are expected to provide sufficient information to the radiologist, outlining the workers' coal dust exposure and the need to assess the X-ray for CMDLD to the ILO classification.

The Royal Australian and New Zealand College of Radiologists (RANZCR) has prepared a register of clinical radiologists who are available to report on chest X-rays for CWP in line with the ILO classification. The criteria for radiologists to be listed on the register include the following:

- experience in reporting screening radiographs for pneumoconiosis
- familiarity with the ILO classification and willing to report using the classification
- sufficient caseload of referrals to maintain their competence in this area.

Since 27 July 2016, all chest X-ray reports must be completed using the prescribed ILO reporting template.

In practice all underground coal workers receive a chest X-ray at least once every five years. Approximately 30 per cent of open-cut workers have had a chest X-ray under the Health Scheme.

From 1 January 2017, regulatory amendments will commence that clarify and broaden the health assessment requirements to ensure:

- all new coal mine workers receive a chest X-ray on entry to the coal mining industry
- chest X-ray examinations for aboveground coal mine workers occur at least once every 10 years
- chest X-ray examinations for underground coal mine workers (and former underground workers working aboveground) occur at least once every five years

- A retiring worker who has not had a medical examination (including a respiratory examination or chest X-ray) in the last three years, can request a retirement examination[11].

Monash review

In January 2016, the Minister for State Development and Minister for Natural Resources and Mines released a five-point plan, including engaging Centre for Occupational and Environmental Health at Monash University to undertake a review. The review was commissioned to ensure that future actions were informed by evidence, data and relevant expertise.

The final report, released 13 July 2016, found structural failings in the design and operation of the respiratory component of the Health Scheme. In particular, the report identified concerns regarding the quality, reading and reporting of chest X-rays; the quality and reading of spirometry; failings in the handling of health assessment records; and the failure of the Health Scheme to adequately survey the respiratory health of the workforce.

DNRM's response

DNRM supports all 18 recommendations of the Monash review in order to protect the health of coal mine workers and to restore workers' confidence in the Health Scheme.

In order to operationalise the recommendations, the department is working on five key areas:

- chest X-rays
- spirometry
- medical practitioners
- surveillance
- digital records management.

Stakeholder engagement

A key feature of the mines safety and health framework, is a commitment to a tripartite approach between unions, industry and government to ensure all parties participate in developing strategies for improving safety and health. With this approach in mind, DNRM is working with industry, unions, government and medical professionals to implement the recommendations.

CMSHAC is the statutory committee that provides advice to the Minister in relation to the safety and health of coal mine workers. The committee includes representatives of industry, unions and government and has been tasked with oversighting the reform of the Health Scheme and is actively engaged in the progress of reforms.

The department regularly meets with union representatives to discuss proposed reforms and to discuss other issues related to the administration of the Health Scheme and the wellbeing of workers

[11] s. 49A, Coal Mining Safety and Health Regulation 2001

diagnosed with CWP. DNRM acknowledges the role that employee representative groups have had in raising awareness about CWP with workers and in working with other stakeholders in progressing solutions.

The department has also been working closely with coal operators and Queensland Resources Council (QRC) and would like to acknowledge the industry's commitment to the health and safety of its workforce and commitment to work with government to improve the Health Scheme and to the development of a best practice screening program.

On 12 July 2016, all underground coal operating companies committed, in a joint letter, to support the actions of government to address CWP (see **Annex C**). This included a commitment to support the recommendations of the Monash Review, to support government steps to implement reform and to provide voluntary chest X-ray re-screening to any underground worker concerned about their respiratory health.

Since this time individual companies have introduced programs to support retired workers who may also be concerned with their respiratory health and are covering the cost of health assessments and associated tests including chest X-rays.

The department also continues to engage closely with the peak medical bodies and regularly seeks advice from a range of medical specialists to assist the development of options to improve the respiratory screening program.

Awareness

To raise awareness of CWP, the department provided materials to mine sites for display and distribution to workers. This included fact sheets with information about CWP, and posters and post cards encouraging miners to talk to their GP if they had any health concerns.

Materials were also distributed via professional medical peak bodies and key health industry stakeholders. Queensland Health facilitated the distribution of information about the disease to health professionals through its medical practitioner network.

In June and July 2016, these efforts were supported by a bi-weekly advertising campaign in regional newspapers throughout Queensland's coal mining regions. Further targeted campaigns are being planned to raise awareness amongst retired workers. These campaigns will encourage workers to obtain medical advice if they have any concerns. They will be supported by factsheets and information on the departments' website. Additionally, a number of mining companies are also engaging with their retired workers to offer health checks to those who are concerned about their respiratory health.

To ensure that medical professionals, including NMAs and general practitioners are supported and informed, the department has produced a number of fact sheets to provide guidance about the disease and to build their understanding of the ILO classification framework. Materials were distributed via professional medical peak bodies and key health industry stakeholders.

Summary of key events

Timeline	Event or action
13 May 2015	DNRM confirms case 1
14 January 2016	Minister Lynham announces five point plan to address CWP including engaging Monash University's Centre for Occupational and Environment Health to conduct an independent review of the respiratory component of the Health Scheme
4 March 2016	RANZCR releases register of Radiologists experienced in reading for pneumoconiosis
31 March 2016	Interim report of the Monash Review of the Respiratory Component of the Coal Mine Workers' Health Scheme is released
8 April 2016	Minister Lynham commits to immediate actions in response to the interim report in regard to introducing minimum standards, training and experience requirements for nominated medical advisers
26 April 2016	Minister Lynham requests recognised standard on dust monitoring via CMSHAC
28 April 2016	Senate Select Committee release report: Black Lung "It buggered my life"
10 May 2016	Health Surveillance Unit changed chest X-ray requirements to be digital only to support ILO standard; and new requirement for spirometry to adhere to Queensland Health: Spirometry (Adult) Guideline
12 July 2016	All 8 underground coal mining businesses commit to offering workers concerned about their respiratory health new checks on current X-rays or fresh X-rays if the X-ray was taken more than two years ago
13 July 2016	Monash report released; Minister announces three key actions: prevention; early detection and safety net for workers with CWP
27 July 2016	Chest X-ray dual reading commences for all chest X-rays taken under the Health Scheme. As an interim measure, X-rays are dual read by US based NIOSH approved readers
5 August 2016	First X-ray sent to the US for dual reading
18 August 2016	Queensland Government commits to parliamentary CWP inquiry
19 August 2016	Minister discusses the re-emergence of CWP at the 5th COAG Energy Council Meeting. All ministers commit to the health of coal mine workers and agree to collaborate to raise awareness among at risk former coal mine workers
30 August 2016	CMSHAC agree to strategic principles for CWP policy reform
15 September 2016	Queensland Parliament appoints a six-person Parliamentary select committee to inquire into how CWP re-emerged and how to prevent it
29 September 2016	Mining Safety and Health Legislation (CWP and Other Matters) Amendment Regulation 2016 made by Executive Council

Timeline	Event or action
12 October 2016	WorkCover signs MOU with DNRM to ensure any cases of CMDLD are reported to DNRM
27 October 2016	DNRM releases a chest X-ray consultation paper including proposed delivery model
7 November 2016	DNRM appoints a new Occupational Physician
17 November 2016	Chest X-ray consultation period closed (16 submissions were received)
1 January 2017	Commencement of amendment regulation

Records management and surveillance

Monash review

DNRM acknowledges that there is much to do to modernise the approach to data management and surveillance of worker health assessment. The department accepts the findings of the Monash review and the opportunity to significantly improve its' surveillance capability to ensure data from the Health Scheme is regularly analysed and used to inform future actions.

The review identified that the scheme is not being used for group health surveillance and recommended that DNRM monitor and analyse trends and communicate these with stakeholders. The report made a number of recommendations relating to surveillance. Broadly, these were:

- to include surveillance in the purpose of the Health Scheme
- improve the acquisition and archiving of digital chest X-rays
- maintain a register of workers at risk from dust exposure
- DNRM should conduct ongoing individual and group surveillance of health data collected under the scheme
- include current and former coal mine workers, including retirees

The Monash review also noted that there are very few models for comprehensive surveillance of occupational disease in Australia.

The Monash review highlighted that the current health assessment record management and transfer processes were inefficient and paper-based, that there was no medical audit of collected data, there were barriers to retrieval of records, and there was a backlog of "about 100,000" records awaiting entry into the DNRM database.

The review found that the HSU performs an administrative check of the health assessment forms for missing information, but there is no medical review or audit of the collected health data.

The review recommended a transition to an electronic system of data entry and storage, including the ability for NMAs to directly enter and retrieve health assessment data, and implementation of a regular audit function.

Health Surveillance Unit

The HSU is responsible for collecting and maintaining the records for the Health Scheme. The HSU reports to the Executive Director, Mine Safety and Health and currently has 10.5 FTEs including temporary staff appointed to address data entry backlogs. The department engaged the additional staff to clear the backlog of health assessment forms to ensure all workers' health records are entered or scanned into the database by end of June 2017. Included within the HSU is the department's Occupational Physician.

Worker records

As part of the Health Scheme, the department is responsible for holding or storing a copy of a workers' health record. Under the regulation, NMAs must provide DNRM with completed health assessments and any chest X-rays and other reports obtained in the course of the health assessment for storage. Importantly under the regulation, the department does not have a diagnostic role or function. It is the role of the NMA to identify and detect disease and where detected to work with an affected worker and other medical specialists to identify appropriate treatment pathways.

It is estimated that the department holds a total of 395,500 health records for 135,400 workers for the period commencing January 1983 up to and including 14 October 2016. This includes records of health assessments conducted under the current Health Scheme and under the Queensland Coal Board (QCB). Records held include health assessment forms, chest X-rays (digital and analogue), chest X-ray reports, spirometry reports and spirographs.

Currently the department receives on average 300-400 health assessment records each week (not including X-rays received for dual reading by the University of Illinois at Chicago).

DNRM has consolidated its storage of coal workers records. Records are now held by or on behalf of DNRM at four storage facilities in the greater Brisbane area at Eagle Farm; Redbank; Stafford and by an information management service provider, Recall, at their facilities at Geebung and Acacia Ridge. Each location is a secure facility.

While all records are not recorded in the department's database, all records in all facilities are indexed so that the department can determine if a record for a worker is held and at which site. This enables a worker to request a copy of their health records at any time and for DNRM to retrieve those records. It should also be noted that the Health Scheme specifically provides for workers to access their records, so workers do not need to lodge a Right to Information request to gain access.

As current health assessments are received, details of the respiratory assessment and other identifiers are added to the database and reports, digital X-rays and spirographs are also attached digitally to the file.

Backlog

DNRM is well advanced in clearing the significant data entry backlog identified in the Monash review, which emerged during the period of the mining boom and covers a period of approximately 10 years.

Since May 2016, the department has entered key identifiers and respiratory data from over 80,000 worker records into the electronic database, prioritising underground workers. By July 2016, key identifiers and respiratory for all underground workers had been entered. The department is currently working to process the remaining unentered records and it is anticipated that key identifiers and respiratory data for all records will be entered by 30 June 2017.

Rathus and Abrahams report

The 1983-84 Rathus and Abrahams survey assessed over 7,000 coal workers to "identify the incidence and severity of lung disorders which may be related to coal mining and to seek recommendations for future direction". 499 miners workers were identified with abnormal X-rays.

The Rathus and Abrahams report states that appropriate action was taken to notify each of the 499 workers with abnormal X-rays and indicates that 102 received a more complete follow up and 75 were classified as CWP. The Queensland Coal Board Annual Report for the year ended 30 June 1984 stated that all workers were contacted about their individual X-ray results. It should also be noted that the 1984-85 Queensland Coal Board Annual Report indicates on page 33, that workers who were advised of an abnormality were again contacted.

When the Queensland Coal Board was dissolved, its functions and records were transferred to the then Department of Mines and Energy. Since the CWP select committee's inquiry began, DNRM has been continuing investigations to attempt to identify complete details of the workers the subject of the Rathus and Abrahams survey.

The department has identified some workers who were the subject of the Rathus and Abrahams survey. Their records expressly indicate that the X-rays were provided to Queensland Health at the time of the survey. Queensland Health has advised that a check against the destruction register of the Metro South Clinical Tuberculosis Service shows that X-rays from this time have been destroyed. DNRM however does hold the health assessment records – apart from the chest X-rays – of all workers. DNRM continues to work with Queensland Health to better understand the circumstances of these workers' records.

A letter from the doctors Rathus and Abrahams to the then Director of Medical Services of the United Kingdom's National Coal Board, makes observations about the survey.

The letter outlines some limitations the doctors observed in the survey and states:

> "*We probably over-diagnosed the lower grades of pneumoconiosis and this was deliberate – to identify individuals requiring follow-up."*

An improved electronic records management system

DNRM intends to manage coal worker health data and enable surveillance through an improved electronic records system that digitally holds a coal worker's records.

DNRM is already implementing interim improvements to its existing records management capability. Recent amendments have increased auditing and reporting capability particularly in regard to chest X-ray dual reading.

Longer-term, DNRM will invest in an improved system that enables improved records management and data analysis and maintains best practice security and privacy standards. To ensure that the improved system is fit for purpose, final design requirements will be determined once policy enhancements to the Health Scheme are finalised.

Work-to-date has identified a number of potential improvements. Work is already proceeding to enable a staged implementation – prioritising direct access by NMAs – to deliver the anticipated benefits of online transactions for worker health assessments. Work is also being done to explore the potential of linking an improved system to the MyHealth system – the Australian Government health record initiative - to allow health information gathered under the coal mine workers health scheme to be linked to their other personal health records.

DNRM is investigating options to allow NMAs to directly enter health data from their practice software, with auto-validation of data as it is entered to ensure completeness and consistency. This will reduce the manual handling requirements for NMAs and departmental staff and improve data quality. The system will also allow NMAs to compare and retrieve worker records including historical chest X-ray images and reports.

Data will be captured and presented in a manner that supports industry-wide health surveillance. For example, each coal worker will have a unique reference number so that their health can be tracked and monitored throughout their career, across multiple employers and medical practitioners, and into retirement.

Where possible, the improved system will be compatible with other relevant systems, such as X-ray service providers. It will also be flexible and scalable to ensure that it can adapt to and meet future requirements.

DNRM is currently identifying system implementation options, and is working towards an initial suite of system improvements by mid-2017, with the timing of further system improvements to complement enhancements to the broader Heath Scheme.

A future surveillance model

DNRM is actively working to design an effective surveillance model for the Health Scheme that informs efforts to prevent CMDLDs. The surveillance model will complement the respiratory screening program by surveying the health of the entire workforce to monitor for emerging patterns and trends.

DNRM will apply an 'enhanced surveillance' approach whereby clinical results are combined with other data including dust monitoring and occupational history to better identify rates of occurrence, and any trends or common factors. This will be supported by a unique reference number for coal mine workers.

Recognition of a workers excessive exposure should not be an end in itself but a means to improve future preventative efforts. DNRM is focussed on applying the results of surveillance to CMDLD prevention. Surveillance results will guide future decision making regarding mine safety and health. It is anticipated that the department will develop a multi-disciplinary governance model to recommend appropriate responses to surveillance outcomes. Surveillance results and the actions taken in response to these results will be regularly reported.

Surveillance will be underpinned by valid, reliable data that is appropriately managed through an improved electronic records system. The system will contain all information necessary for surveillance, and have the capability to make this information available for analysis as required.

It is anticipated that the department may seek to partner with an external provider, such as a university school with a speciality in occupational health surveillance, to undertake best practice data analysis.

At this preliminary stage, it is anticipated that the future surveillance model will capture sufficient data to enable surveillance of all forms of CMDLD and will be sufficiently flexible to enable the scope to be extended to other health related worker data as appropriate.

Chest X-rays

High quality chest X-rays are a key component of the respiratory screening program. Chest X-rays, along with spirometry, are two key tests that are used to screen workers and identify changes that may indicate CMDLD.

To restore worker confidence, the department has put significant focus on improvements to the chest X-ray component, with improvements being progressively implemented from May 2016 with the introduction of mandatory ILO reporting.

Monash chest X-ray review

The chest X-ray component of the Monash review was undertaken by a team at the University of Illinois at Chicago (UIC) under the supervision of Professor Robert Cohen.

In setting the scope for the review the department deliberately sought to target the incidence of disease amongst those workers at greatest risk (those with the greatest length of potential exposure).

The review assessed chest X-rays from 248 coal mine workers with more than 10 years of underground experience and identified:

- 18 cases of possible simple CWP that required further investigation.
- Of these, only two of the 15 available original X-ray reports by radiologists identified features that could be interpreted as CWP. In neither of these two possible cases did the NMA record a finding of possible CWP, nor was any recommendation made regarding fitness for work from a respiratory point of view.
- A higher than acceptable portion of X-ray images had quality issues which could affect the accurate detection of small opacities characteristic of CWP (e.g. 20 per cent had issues resulting from poor positioning, poor contrast and excessive edge enhancement and 15 per cent had issues related to digital processing).

Following the receipt of the report, all 18 workers with possible simple CWP were contacted through either their NMA or by the department's occupational physician. To date, two of these workers have been confirmed as having simple CWP, 14 have been cleared of CWP, and two are progressively undergoing further testing in consultation with their medical practitioners.

Monash recommendations

The Monash review recommended:

- Chest X-rays should be performed by appropriately trained staff (i.e. qualified radiographers) and read to the ILO classification
- Additional training and evaluation should be provided in the use of the ILO classification for radiologists and respiratory physicians who seek to classify chest X-rays – e.g. NIOSH B Reader program

- X-rays should be read by a selected group of medical practitioners and by at least two separate readers (a dual or two-reader process)
- Radiology clinics should be provided with technical guidelines detailing specifications for imaging equipment, software, image acquisition and display and quality control systems
- Ongoing clinical auditing or X-ray screening
- Ensure feedback is provided to coal mine workers on screening outcomes
- Improve the acquisition and archiving of digital X-rays by DNRM to facilitate surveillance.

DNRMs immediate response

Several steps to improve the X-ray component of the Health Scheme have been taken by the department, industry and the medical profession:

- All new X-rays taken under the Health Scheme must be in a digital format – DNRM no longer accepts analogue X-ray films.
- NMAs must clearly identify when they refer workers for a chest X-ray that it is for screening under the Health Scheme.
- Radiologists must report on a prescribed ILO reporting form.
- RANZCR introduced a register of clinical radiologists who are available to report on chest X-rays for CWP in line with the ILO classification. The register currently has 40 clinical radiologists, with 24 based in Queensland.
- All of Queensland coal operating companies committed to provide voluntary X-ray re-screening to any underground worker concerned about their respiratory health.
- On 27 July 2016, an interim dual-screening process was introduced. All chest X-rays taken under the Health Scheme are first read by an Australian radiologist to the ILO classification and then assessed by NIOSH approved readers at the UIC.

As at 6 December 2016, the department has sent 1,920 chest X-rays to the United States for dual reading. This has included X-rays from:

- current workers going through regular screening
- those who are voluntarily seeking to have their chest X-rays re-read
- retired workers and those who have left the industry.

The process for coordinating the sending of X-rays to the United States is administered by DNRM through a secure electronic file transfer.

The dual read by the UIC is independent of the first read – in that the US based readers do not have knowledge of the first readers report (blind reading). US based reading sees all X-rays read by a minimum of two US readers and then a third if adjudication is required. One ILO report is subsequently issued from the US.

To ensure that no worker's health is disadvantaged by this process, the department has recommended that where a first read by an Australian radiologist identifies potential CMDLD, that a NMA should immediately refer the worker for a high resolution CT scan and not wait for the outcome of the dual read by the UIC. While further investigation continues for some workers, to date the dual reading process has not resulted in a new confirmed cases of CWP.

The cost of dual reading by US based readers is being met by the department.

Queensland based X-ray screening

The department is committed to improving the quality of X-ray screening and ensuring the system is sustainable and effective.

Similar screening programs — BreastScreen Queensland, the Coal Workers' Health Surveillance Program in the United States and Coal Services NSW — have been analysed to compare features and determine what learnings can be applied in developing an improved X-ray screening program for Queensland coal mine workers.

This analysis suggests that a dual reading system by a small cohort of medical practitioners is optimal and would be consistent with the recommendations set out in the Monash review. It also identifies the importance of technical specifications and guidelines, along with quality assurance in ensuring consistency and proficiency.

DNRM is consulting with stakeholders on a proposed Queensland X-ray screening program that would be delivered by the private sector through a competitive tender process with technical requirements set by government. It is envisaged that this program would include a strong external audit component to ensure best practice in the taking and reading of X-rays is maintained. This service delivery model is consistent with the approach taken by Queensland Health, which frequently uses the private sector to deliver an array of health services.

The department is anticipates that under this model X-rays would be dual read to the ILO classification by radiologists who have successfully completed an ILO training program (such as the NIOSH B-reader program). Government would engage an independent external auditor to periodically review the quality of chest X-ray screening delivered by the service provider. Additionally the provider would be required to demonstrate a constant quality assurance program, including provision and training of staff regarding performance.

Preliminary feedback from company, worker and medical stakeholders is broadly supportive of the proposed model.

Lung function testing (spirometry)

Spirometry is a lung function test that measures airflow from the lungs. All Queensland coal mine workers undergo spirometry administered by medical practitioners as part of their health assessments under the Health Scheme.

Monash review

The Monash team reviewed a sample of 256 spirometry tests taken under the Health Scheme and also surveyed NMAs about their use of spirometry. Based upon this research, the final report identified significant issues with the spirometry screening.

The review team concluded that approximately 40 per cent of spirometry tests were poorly executed and did not enable meaningful interpretation. In addition, only 43 per cent of the spirometry results evaluated had been accurately interpreted and reported by NMAs.

The reviewers also concluded that respondents had a poor knowledge of the spirometry equipment, including quality control measures. For instance, 66 per cent of spirometers had not been calibrated in 2016, and only one-third of sites participated in ongoing quality assurance programs.

In relation to training, the reviewers concluded that spirometry training for testers was limited, with approximately two-thirds having completed a training course, but only one-third being able to specify the year of completion.

In summary, the report identified significant issues with the quality of the spirometry taken. This included the technical proficiency of those conducting tests and maintaining the equipment, and the ability of NMAs to interpret the data accurately.

The final report of the Monash review included a number of recommendations relating to spirometry:

- spirometry under the Health Scheme should be conducted at:
    - respiratory laboratories accredited by Thoracic Society of Australian and New Zealand (TSANZ) or similar bodies; or
    - medical facilities accredited specifically for spirometry
- scientists and technicians conducting tests under the Health Scheme should complete approved initial and on-going training in spirometry
- spirometry testing is undertaken as part of a quality control program consistent with the American Thoracic Society/European Respiratory Society standards
- the quality of spirometry tests should be regularly audited under the Health Scheme.

DNRMs response

The department has taken several steps to improve the spirometry component of the scheme:

- A change was made to the health assessment form to clarify that spirometry must be undertaken by appropriately trained operators to the standard outlined in Queensland Health: Spirometry (Adult) Guideline[12]. This standard requires a comparative assessment with

- A change was made to require copies of spirometry reports to be provided to the department along with the health assessment form. The purpose of this change was to ensure medical practitioners can access previous spirograms, including those from other medical practices, in order to identify any changes in the individual's lung function over time.

In addition, amendments to the *Coal Mining Safety and Health Regulation 2001*, which are due to commence on 1 January 2017, will further clarify that:

- a health assessment must include an examination of the person's respiratory function (i.e. spirometry) on entry into the coal mining industry, at least every 10 years for aboveground workers, and at least every five years for underground workers

- respiratory function examinations undertaken as part of periodic health assessments will include a comparative assessment with previous respiratory function results where available

- all medical examinations will be performed by a person qualified and competent to conduct the examination.

Although spirometry standards and training programs are currently available for practitioners, the Monash review found inconsistent practice in the area of spirometry. This provides a compelling argument for further intervention to improve the testing and interpretation of spirometry undertaken for the Health Scheme, in order to assist in the early detection of CMDLDs.

The Monash review team recommended that spirometry under the Health Scheme should be conducted at either respiratory laboratories accredited by TSANZ or similar bodies, or medical facilities accredited specifically for spirometry.

Although the use of existing TSANZ accredited laboratories for spirometry would ensure that testing is carried out in accordance with rigorous scientific standards, DNRM notes that nine out of the 10 current accredited laboratories are found in the Brisbane and Gold Coast areas. In addition, this TSANZ accreditation program was established to accredit respiratory laboratories, which typically conduct 15 - 20 spirometry tests per day[13] as well as other advanced respiratory procedures.

There are currently around 29,000 coal mine workers in Queensland, working at 54 coal mines across Queensland. A proportion of these workers operate under Fly-In, Fly-Out arrangements, however, many live in regional Queensland close to the mine sites.

NMAs under the Health Scheme are similarly distributed across Queensland, as well and other states and territories, and provide convenient services to coal mine workers in their areas. Records held by the DNRM Health Surveillance Unit clarify that 165 different NMAs undertook health assessments under the Health Scheme in 2015-16. However, approximately half of the assessments

[12] https://www.health.qld.gov.au/qhpolicy/docs/gdl/qh-gdl-386.pdf
[13] Monash review final report, page 54.

in that year were undertaken by only 10 NMAs, who operated from locations around the greater Mackay and Brisbane areas.

This regional distribution of workers and their NMAs, along with the concentration of assessments at particular practices, suggests that a spirometry specific accreditation program for general medical practices and occupational health clinics is the most practical option for consideration by government.

Consequently, the department has been working with TSANZ to identify options for a practice-based, spirometry accreditation program for those NMAs in general medical practices and occupational health clinics – with a focus on improving quality of spirometry and interpretation of results.

A consultation paper is currently being prepared by the department that outlines a delivery model for a practice-based accreditation program for those seeking to undertake spirometry under the Health Scheme. The paper will cover matters such as training for those administering the tests, spirometry equipment and quality control, and clinical audit as part of the program.

Feedback from stakeholders on the paper will inform the further development of a preferred option that will be presented to CMSHAC and the Queensland Government for consideration.

Nominated Medical Advisers

Nominated Medical Advisers (NMAs) are the medical practitioners who undertake the medical assessment of workers under the scheme.

Coal Mine Workers' Health Scheme

Under the Regulation, NMAs are appointed by employers (mining operators and contractors) and must conduct a health assessment of coal mine workers in accordance with the provisions of the health scheme.

Whilst all NMAs must be registered and maintain registration with the Australian Health Practitioner Registration Agency there is currently no prescribed minimum qualifications for NMAs nor any requirements that NMAs must be experienced in occupational medicine or be familiar with coal mining operations.

All appointments of NMAs are notified to the department by employers (mining operators and contractors). The department maintains a list of NMAs but has no role under current legislation in approving the appointment of NMAs nor does it currently assess doctor's qualifications or experience.

The current legislative framework provides that the employer must contract the appointment of the NMA and that the contract must require that the NMA must discuss, and give advice about, appropriate duties for the worker. The legislation further requires that the employer must also include in the contract an obligation on the NMA, if asked by a worker, to discuss the worker's health assessment with another doctor nominated by the worker.

Monash review

The Monash review identified that there were over 200 NMAs registered to undertake health assessments, with the majority located in Brisbane, Mackay, Rockhampton, Sunshine Coast and the Gold Coast. The number of registered NMAs increased during the mining boom of the 2000s. Prior to the boom, the average number of NMAs was 40.

The Monash review highlighted that, of the registered NMAs, 146 were general practitioners. There were 57 medical practitioners with general registration practising in both Occupational Health Service and General Practice clinics. Only 12 per cent of NMAs are specialist occupational physicians.

As at 2 December 2016, the department has 243 registered NMAs, however, the majority of health assessments are performed by a small cohort of NMAs.

Since the commencement of the chest X-ray dual reading process in late July 2016, the department has observed that 10 NMAs are currently completing approximately half of all health assessments, with 22 NMAs completing two-thirds of assessments.

The Monash review made a number of recommendations in relation to respiratory health assessments and the doctors who undertake the assessments including:

- there should be a much smaller pool of doctors approved by DNRM

- doctors should receive formal training and visit mine sites and have necessary experience to undertake respiratory health assessments
- the role of the doctor undertaking respiratory assessments should be specifically defined and distinguished from NMAs.

DNRMs response

To date the department has actively worked to ensure medical professionals involved in the industry are informed about the disease and changes made to improve the Health Scheme – including the introduction of dual chest X-ray reading.

Materials were distributed directly to NMAs and through professional medical peak bodies and key health industry stakeholders. Additionally Queensland Health facilitated the distribution of information about the disease to health professionals (targeting general practitioners) through its medical practitioner network.

A consultation paper on issues related to medical practitioners and assessments is currently under development. It is anticipated that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit.

It is anticipated that under an improved Health Scheme:

- the number of NMAs will be rationalised
- all medical practitioners performing respiratory health assessments will be required to have minimum qualifications including a level of training in occupational medicine
- all medical practitioners performing respiratory health assessments will be required to complete an induction program that will include familiarisation with coal mining practice; the ILO classification; and the interpretation of spirometry; emerging trends and the administration of the scheme
- All medical practitioners performing respiratory health assessments will be subject to a regular audit process
- The department will maintain a register of all medical practitioners performing respiratory health assessments.
- Induction and training will include advice on administration of the Health Scheme, CMDLDs, ILO reporting, spirometry, emerging trends, mining practices and guidance on appropriate diagnostic pathways
- A multi-disciplinary panel of medical practitioners will be formed to advise the department and support periodic auditing, quality assurance and surveillance of the health scheme.

Role of the occupational physician

The department's occupational physician provides information and advice to NMAs to support them in carrying out their responsibilities under the Health Scheme. The occupational physician is also the point of contact for NMAs. The position is neither a statutory nor a clinical role, and there is no involvement in the diagnosis of diseases or a role in the ongoing medical care or treatment of affected workers. The role does not review completed health assessments that are submitted by NMAs.

In confirming a case of CWP, the occupational physician:

- confirms the diagnosis of CWP
- checks the diagnosis has been made by an appropriately qualified medical practitioner – typically a respiratory or thoracic physician.

The occupational physician does not undertake a clinical review or assessment of the diagnosis, but ensures that the diagnosis has been made by an appropriately qualified medical practitioner, for example a respiratory physician.

DNRM has recently recruited an occupational physician who will provide advice on the development of an effective health surveillance scheme and health surveillance policy and the ongoing requirements of in-house medical expertise.

It is also anticipated that the position will support the establishment and ongoing governance of a suitable multi-disciplinary panel of medical practitioners that will provide assistance in supporting the clinical audit of cases and the audit of the scheme including the performance of doctors who perform health assessments.

The newly appointed occupational physician has experience in the practice of occupational and environmental medicine, including work site experience and strong research interest in health surveillance. This includes experience in hazardous substance health surveillance.

Role of NMAs

NMAs oversee the health assessment of coal mine workers to assess their fitness to undertake the role for which they are appointed. While an NMA is a doctor the NMA is not normally the coal mine workers' personal physician. Should the NMA identify a worker has a condition – for example, high blood pressure – they should refer a worker to their general practitioner for management.

If a worker is diagnosed with CWP their ongoing treatment and management will not, generally, be managed by the NMA. This role will be undertaken by a workers' personal physician.

Conclusion

The department acknowledges the seriousness of CWP and is focussed on preventing all forms of CMDLD.

To better understand the failings of the Health Scheme, the department engaged the Centre for Occupational and Environmental Health at Monash University to conduct an independent review of the respiratory component of the scheme.

The department supports all 18 recommendations of this independent review and is now working to immediately operationalise the recommendations across five key themes: chest X-ray, spirometry, surveillance, medical assessments and practitioners, and electronic records management.

Key deliverables will include:

- New delivery model for chest x-rays to deliver a Queensland based ILO dual reading program
- Accreditation model for spirometry
- Clinical pathway for the diagnosis and ongoing management of CDMLD
- Guidelines on the capabilities and clinical skills required for nominated medical advisers
- Integrated, digitally accessible data record system for worker health management
- Audit of data collected on the respiratory health of coal mine workers
- A multi-disciplinary panel of medical practitioners
- Further targeted awareness campaigns for retired workers

The Mines Inspectorate continues to monitor compliance in relation to respirable coal dust levels in coal mines and take action as necessary. It is also working to progress the development of a respirable dust database to enable surveillance and reporting. This database will complement new regulatory arrangements for dust commencing in 2017 and will provide information which can be used to improve approaches to dust management generally.

Key deliverables will include:

- New regulation and recognised standards for dust management
- Release of the respirable dust database
- Commencement of quarterly dust reporting and publication of data online
- Establishment of standing dust committee to oversight industry performance
- Implementation of outcomes of the Safe Work Australia review of occupational exposure limits

The department is consulting with a wide range of industry, worker and medical stakeholders, to ensure sustainable and practical solutions that will restore confidence amongst coal mine workers, their families and communities.

The department welcomes the work of the Parliamentary Inquiry and will continue to support the important work of the Select Committee. This is a complex, long term and far reaching issue that requires legislative changes, process and systems reforms, as well as the efforts of many stakeholder groups.

The health and safety of all coal mine workers is the continued priority of the department.

Acronyms and abbreviations used in this submission

ADB	Air-dried basis
CFMEU	Construction, Forestry, Mining and Energy Union
CHPP	Coal handling and preparation plant
CMDLD	Coal Mine Dust Lung Disease
CMWHS	Coal Mine Workers' Health Scheme
CMSHAC	Coal Mining Safety and Health Advisory Committee
CMSHA	*Coal Mining Safety and Health Act 1999*
CMSHR	*Coal Mining Safety and Health Regulation 2001*
CO_2	Carbon dioxide gas
COAG	Council of Australia Government
COPD	Chronic obstructive pulmonary disease
CWP	Coal worker's pneumoconiosis
DDT	Dead-weight tonnage
FTE	Full-time equivalent
HGI	Hardgrove Grindability Index
HSU	Health Surveillance Unit
IECEx	International Electro technical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres
ILO	International Labour Organisation
L/Min	litres per minute
LTCC	Longwall top coal caving
Mg/m^3	milligram per cubic metre
MOU	Memorandum of Understanding
Mtpa	million tonnes per annum

MVUE	Minimum-variance unbiased estimator
NIOSH	National Institute for Occupational Safety and Health
PCI	Pulverized coal injection
PMF	Progressive massive fibrosis
PPE	Personal Protective Equipment
QCB	Queensland Coal Board
QRC	Queensland Resources Council
RANZCR	Royal Australian and New Zealand College of Radiologists
SSE	Site Senior Executive
SSHR	Site safety and Health Representative
ISHR	Industry Safety and Health Representative
RIS	Regulatory Impact Statement
RV	reflectivity
SEGS	Similar Exposure Groups
SIMTARS	Safety in Mines Testing and Research Station
SWA	Safe Work Australia
TEOM	Tapered element oscillating microbalance
TSANZ	Thoracic Society of Australian and New Zealand
TWA	Time-weighted average
UG	Underground
UIC	University of Illinios at Chicago
YTD	Year to date

Annex A - Stakeholder submissions & DNRM comment

Sub no.	Submitter	Topic	Summary	Departmental comments
001	David Cliff	Dust exposure	Concerns that information was available for many years highlighting level of dust exposure to workers and the availability of research into dust control.	It is recognised that dust control and worker exposure to dust has been an issue for the coal mining industry for many years. That is why the department has undertaken reviews of mines dust management and monitoring processes and provided industry guidance on dust management and monitoring. In 2009 DNRM conducted a review of dust monitoring programs at all coal mines. In 2010, the department issued a report providing feedback of this review to all underground and open-cut mines on matters relating to dust management and monitoring. This report provided guidance on establishing a risk-based dust monitoring program that included the concept of similar exposure groups (SEGs). In 2014 DNRM undertook an extensive statistical review of personal dust exposures in all underground coal mines. An important part of the risk-based management of dust exposure is to review the results of dust monitoring and implement controls. While mines generally were conducting monitoring it was a failure at some sites to review and implement controls. The mines inspectorate has taken compliance action in respect of mines to address this issue. Directives issued to mines may remain open even after compliance is achieved, so that sustained compliance can be demonstrated. DNRM is fully committed to dust management and reducing worker exposure to dust. For example, the development of recognised standards for dust control and monitoring will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. In addition, DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.

Sub no.	Submitter	Topic	Summary	Departmental comments
001	David Cliff	Dust monitoring	Highlights the importance of an effective monitoring regime. Recommends use of real-time monitors and the public availability of monitoring data.	The department agrees that an effective monitoring regime is extremely important. That is why it commenced reviews of dust monitoring programs, audited coal dust exposure levels and took compliance action. However, it is acknowledged that the system needs improvement. This will be made through the recognised standard for respirable dust monitoring and regulatory amendments due to commence on 1 January 2017 will require coal mining companies to: • regularly report dust monitoring results to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months • advise inspectors every time dust concentrations exceed prescribed levels Results will be regularly reviewed by the Coal Mining Safety and Health Advisory Committee and can be reported publically through the Mines Safety & Health Annual Report. Data will also be available to the independent Commissioner for Mines Safety and Health who provides an annual report to the Minister and Parliament. DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
001	David Cliff	Surveillance	Recommends a surveillance program combining both dust monitoring and epidemiological data across different exposure groups, and expanding health surveillance to include other injury and illness types and other sectors of the mining industry.	The department supports all 18 of the Monash review recommendations. These include DNRM conducting ongoing individual and group surveillance of health data collected under the health scheme, detect early CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account. In addition, the department is currently developing a dust monitoring database that it anticipates will enable analysis of worker health data against respirable dust exposure data.

Sub no.	Submitter	Topic	Summary	Departmental comments
001	David Cliff	Doctors	Recommends that doctors carrying out health assessments have knowledge of the mining environment.	The Monash review recommends training for Nominated Medical Advisors (NMA) that includes providing an awareness of coal mining. DNRM is currently considering future NMA training and induction options.
002	Andrew Gray	Air filtering and personal protective equipment (PPE)	Suggests a range of options to enhance the effectiveness of PPE to minimise dust exposure and motivate use. This includes PPE design, colour, availability, education and feedback.	The accepted industry standard for achieving an acceptable level of risk is by working through the hierarchy of control. It stipulates that best and most effective protection from harm is through elimination – that is by preventing the hazard from occurring in the first place. If elimination is not reasonably practicable, risk must be minimised by working through the alternatives in the hierarchy, from the highest to the lowest. PPE is the lowest form of control and does not remove the hazard. PPE is an active control, as it requires active involvement by the wearer in understanding and following procedure (for example, donning PPE in presence of dust, ensuring a good fit, replacement if damaged etc.). Active controls are vulnerable to oversight by the person applying relevant procedure. DNRM is focussed on ensuring higher level controls are implemented to ensure respirable dust levels are below prescribed levels. If respirable dust masks are used, it is essential that adequate seal enforcement is achieved. This requires a worker to be clean shaven. DNRM provides a consistent message that respiratory protective equipment should only be used when it is a part of a respiratory protection program that has been established in accordance with AS1715. This requirement has been reinforced in the recognised standard for dust control due for release in early 2017.
002	Andrew Gray	Railways	Raised potential for dust exposure near rail lines and that monitoring should take place.	The Department of Environment and Heritage Protection (EHP) regulates non-occupational air quality under the *Environmental Protection Act 1994*. Information is available to the public on EHP's webpage: http://www.ehp.qld.gov.au/management/coal-dust/. Notably in 2013, the then Department of Science, Information Technology, Innovation and the Arts commenced an investigation into coal dust levels along the Western and Metropolitan Rail Systems in South-East Queensland. The monitoring results showed

Sub no.	Submitter	Topic	Summary	Departmental comments
				that ambient particle concentrations complied with ambient air quality objectives at all rail corridor monitoring sites during both the pre and post-veneering monitoring periods. The major influence on the levels of particles was not rail transport emissions, but other urban particle emission sources. Further information on the study is available at www.ehp.qld.gov.au/management/coal-dust/monitoring. Ongoing air quality monitoring continues at Cannon Hill Railway Station in Brisbane, Jondaryan west of Toowoomba, and the Ports of Gladstone and Brisbane.
003	Bernard Corden	Approach to safety	Recommends that the focus be on preventative aspects, and signals for potential safety issues. Suggests that, due to a result of a number of factors, a new approach to managing safety should be considered, such as 'risk and energy damage theory', which offers a process and evidence based approach.	The *Coal Mining Safety and Health Act 1999* (CMSHA) is based on a risk management approach that requires the anticipation and control of problems before they arise. This includes: • the requirement for all mines to have a safety and health management system that provides for an acceptable level of risk • proactive inspector's powers and interventionist powers where risk is not appropriately managed • the requirement that operators have a safety-oriented management structure • obligations applying to specified office holders to ensure an acceptable level of risk. The development of the CMSHA was shaped by several coal mining disasters in Queensland. A key outcome of the inquiry into the 1994 Moura No. 2 mining disaster was the introduction of risk-based safety and health management systems for each mining operation. The government worked extensively with industry and union over six years to develop the current risk-based legislation.
003	Bernard Corden	Dust exposure	CWP cases is a result of new machinery producing excessive dust, rushed appointment of safety advisors and the prioritisation of production value over worker safety. Suggests the inquiry investigate past mine log books for dust complaints and if any action was taken.	Between 2014 and 2016 the department requested all underground coal mines to provide dust monitoring data covering the period 2000-14. The department analysed the results and found there was no clear correlation between production and dust exceedance rate. An important part of the risk-based management of dust exposure is to review the results of dust monitoring and implement controls. While

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				mines generally were conducting monitoring it was a failure at some sites to review and implement controls.
004	Emeritus Professor Odwyn Jones	Diesel engine exhaust exposure	Risks associated with diesel exposure in underground mines is highlighted and the contribution this could have on the respiratory health of mine workers. Recommends improved ventilation and ensuring ventilation officers have appropriate qualifications, reviewing current exposure standards for disease exhaust pollutants and greater compliance.	The department is aware of the health risks associated with diesel exposure and has been working proactively to understand the current level of risk and the effectiveness of mines' diesel exhaust management plans. The department has also conducted three reviews of industry exposure data and audited every underground coal mine on three occasions to review diesel exhaust management plans. The department has issued directives based on the review of exposure data of various similar exposure groups. The department has been coordinating a diesel particulate matter (DPM) steering committee made up of 25-40 industry representatives for over 10 years. The committee meets twice a year and it provides DNRM with the chance to update industry on the most recent technologies in reducing diesel exhaust emissions. The committee has drafted a guidance note for the control of diesel exhaust emissions in underground coal mines. As a result of the department's work through the committee, industry has worked to reduce diesel emission across the industry through putting in place controls and reducing the source. In December 2012, DNRM released a safety bulletin (No. 127) following the International Agency for Research on Cancer's declaration that diesel exhaust is carcinogenic to humans. The safety bulletin recommended the exposure limit to adopt and adjusting the exposure limit for DPM to account for extended shift lengths or non-standard rosters.
004	Emeritus Professor Odwyn Jones	PPE and ventilation	Suggests improving preventive measures by appointing experienced ventilation officers, providing workers with appropriate PPE and educating worker's about the importance of PPE in dusty environments.	The accepted industry standard for achieving an acceptable level of risk is by working through the hierarchy of control. It stipulates that best and most effective protection from harm is through elimination – that is by preventing the hazard from occurring in the first place. If elimination is not reasonably practicable, risk must be minimised by working through the alternatives in the hierarchy, from the highest to the lowest. PPE is the lowest form of control and does not remove the hazard.

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				PPE is an active control, as it requires active involvement by the wearer in understanding and following procedure (for example, donning PPE in presence of dust, ensuring a good fit, replacement if damaged etc.). Active controls are vulnerable to oversight by the person applying relevant procedure. DNRM is focussed on ensuring higher level controls are implemented to ensure respirable dust levels are below prescribed levels. If respirable dust masks are used, it is essential that adequate seal enforcement is achieved. This requires a worker to be clean shaven. DNRM provides a consistent message that respiratory protective equipment should only be used when it is a part of a respiratory protection program that has been established in accordance with AS1715. This requirement has been reinforced in the recognised standard for dust control due for release in early 2017. In implementing the Monash review recommendations, the department will be developing information about CMDLDs for coal mine workers.
004	Emeritus Professor Odwyn Jones	Dust exposure levels	Current standards and guidelines relating to underground miners' exposure to respirable coal dust should be reviewed with the intention of bringing into line with new standards adopted in the USA (i.e. lowering exposure level to 1.5 mg/m^3).	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings. DNRM has also reviewed the way that the current and future limit will be enforced. This moves away from a simple average and will require the upper confidence limit of the data set to below the limit. This will provide further protection to workers.
004	Emeritus Professor Odwyn Jones	Dust suppression systems	Efficient dust suppression systems should be installed and maintained on all power loading equipment with special attention being paid to longwall faces equipped with single or double-drum shearers.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease.
004	Emeritus Professor Odwyn Jones	Monitoring and screening programs	More stringent monitoring and recording regimes and screening programs should be introduced, including storage of data at a central repository accessible to workers,	The department supports all 18 recommendations of the Monash review that includes recommendations for the improvement of the respiratory component of the health assessment process. The Monash review recommendations also include that the department

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			government agencies and employers as recently recommended by Australian clinicians.	develop an electronic system of data entry and storage. Scoping of the requirements for such a system is currently underway, including aspects of its accessibility.
004	Emeritus Professor Odwyn Jones	X-rays	Digital radiography to ILO standards should be performed on miners exposed to coal or coal and silica dust at the commencement of employment, and at least every three years thereafter. These images should be assessed by Royal Australian and New Zealand College of Radiologists who can assess to ILO standards.	All new X-rays taken under the Coal Mine Workers' Health Scheme (CMWHS) must be in a digital format – DNRM no longer accepts analogue X-ray films. NMAs must also clearly identify when they refer workers for an X-ray that it is for screening under the CMWHS and radiologists must report on a prescribed ILO reporting form. The Royal Australian and New Zealand College of Radiologists has prepared a register of clinical radiologists who are available to report on chest X-rays for CWP in line with the ILO Classification. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program.
004	Emeritus Professor Odwyn Jones	Education and research	Encourage and assist with funding applied research into all aspects of respirable related health of mine workers	The Monash review recommends ongoing individual and group surveillance of health data collected under the scheme to detect early cases of CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. The department is currently working on a surveillance consultation paper which considers contributing to occupational health research.
005	Bruce Ham	Longwall mining	Reports that respiratory function of workers from German Creek collieries was worse than other mines. German Creek was the oldest longwall mine as it commenced using this technology in 1986.	Between 2014 and 2016 the department requested all underground coal mines to provide dust monitoring data covering the period 2000-14. The department analysed the results and found there was no clear correlation between production and dust exceedance rate. The results showed general consistency across coal seams mined (German Creek, Goonyella and Leichardt and Newlands).
005	Bruce Ham	Health data recording	Concerned if worker health assessment records were simply scanned and not entered into a database that could be subsequently analysed.	As current health assessments are received, details of the respiratory assessment and other identifiers are added to the database and reports, X-rays and spirographs are attached digitally to the file. DNRM acknowledges that there is much to do to modernise the approach to data management and to convert the current database

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				and paper-based approach to a modern interactive system that supports industry wide surveillance. The Monash review recommends ongoing individual and group surveillance of health data collected under the scheme to detect early cases of CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. The department is currently working on a surveillance consultation paper which also considers contributing to occupational health research.
005	Bruce Ham	Workers compensation and Health Department data	There is potential for data sharing between organisations to extract a more comprehensive data set. As long as confidentiality protocols are agreed, the register of coal mines, can be matched by name and date of birth to extract health and health outcome data on miners from databases held by other authorities.	DNRM has recently entered into an arrangement with the Office of Industrial Relations to ensure it becomes aware of any coal mine dust lung disease compensation cases that may present. The department has also been working with Queensland Health to determine if any cases have presented through the health system. Despite there being the code “J60 Coal Workers’ Pneumoconiosis” in the hospital database for admissions, it is understood this code can be used for a number of conditions that may not be related to coal mine dust exposure. A review of individual charts of workers recorded both under the Coal Mine Workers’ Health Scheme and coded as J60 in public patient records, found there was insufficient information in the patient records to definitively confirm the presence of the disease. This exercise was limited to public hospital admissions. There may be cases that present through GPs and specialists or private health care providers that are unable to be identified under current arrangements. DNRM’s expectation is that in implementing the Monash review recommendation to make the Coal Mine Workers’ Health Scheme readily accessible to former workers, any cases of coal mine dust lung diseases that may develop in the future will be identified under the scheme.
005.2	Bruce Ham	Maintaining professional competence	The Australasian Institute of Mining and Metallurgy (AusIMM) Chartered Professional development programs lack significant occupational health competency elements. This program includes senior	DNRM is working with various groups to ensure that appropriate knowledge on respirable dust monitoring and control exists across industry. As part of the new recognised standard on respirable dust monitoring, a competency and the accompanying training package to fulfil that competency will be required for those conducting dust

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			and operational managers and other professionals at coal mines. The program falls within the Queensland Board of Professional Engineers Program that regulates the supply of professional engineering services in Queensland. The Queensland Government, through the Queensland Board of Professional Engineers has the opportunity to call in the AusIMM Chartered Professional program to ensure that there is an understanding of the requirements for a safety management system of occupational exposures such as coal dust.	monitoring on site. This training is planned to expand to those in statutory positions with responsibility for dust exposure starting with ERZ controllers and ventilation officers. The department will provide guidance to the Board of Professional Engineers Queensland on what competencies the department expects of practicing engineers in the mining industry in relation to occupational exposures. DNRM is also interested in helping the industry maintain knowledge through continuing professional development at the local level. In September the Southeast Queensland branch of the AusIMM hosted a technical talk on respirable dust monitoring featuring technical speakers from SIMTARS and the Mines Inspectorate. This technical talk covered the health effects of respirable dust, current monitoring practices, analysis of historical data and real-time instruments.
005.2	Bruce Ham	Health database	The health database is an essential tool in identifying population health changes. Data needs to be current and the system made ready for data analysis. Analysis of deteriorating respiratory function and cumulative dust dose needs to be conducted to identify trigger points where interventions are needed for current miners.	The Monash review recommends ongoing individual and group surveillance of health data collected under the scheme to detect early cases of CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. The department is currently working on a surveillance consultation paper which also considers contributing to occupational health research. In addition, the department is currently developing a dust monitoring database that it anticipates will enable analysis of worker health data against dust exposure data.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	X-rays	Does not believe X-ray images need to be sent off-shore for assessment by B-readers. Supports the compilation of a register of clinical radiologists who are competent in reporting radiographs using the ILO classification of pneumoconiosis. Regular updating of existing skills through continued medical education would enhance awareness of pneumoconiosis among radiologists.	The Royal Australian and New Zealand College of Radiologists has prepared a register of clinical radiologists who are available to report on chest X-rays for CWP in line with the ILO Classification. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program. Radiologists would also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis.

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				The screening of X-rays by US based B-readers at the University of Illinois at Chicago is an interim process until a new Queensland based program is established.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	History of dust exposure	A complete history of all dust exposures in all employments (including interstate exposures) needs to be recorded and made available to examining doctors, to allow estimation of total levels of dust exposure, which are strongly liked with development of disease.	The current health assessment form includes a requirement to outline occupational history and identify if the worker will be employed in an environment with higher risk of dust exposure. The Monash review also recommended that a register of all coal mine workers at risk of dust exposure be created for the purposes of surveillance. The department is currently working on a surveillance consultation paper to address this recommendation. In addition, the department is currently developing a dust monitoring database that it anticipates will enable analysis of worker health data against dust exposure data.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	Lung function testing and spirometry	Spirometry and standardised symptom questionnaires should also be obtained from the start of employment and regularly thereafter and should result in prompt referral to specialist respiratory services if any abnormality is detected. Enhanced spirometry to include measurement of gas transfer factor (a surrogate for assessing oxygen transfer across the lungs) should be considered for screening, as new equipment is available to measure this in the field and this would enhance early disease detection.	The Monash review identified significant issues with the spirometry screening component of the Coal Mine Workers' Health Scheme. It made several related recommendations including that spirometry should be conducted only by accredited practitioners who undertake initial and on-going training and quality of tests regularly audited. Following the Monash Review, changes were made to the health assessment form to clarify that spirometry must be undertaken by appropriately trained operators to the standard outlined in Queensland Health: Spirometry (Adult) Guideline, in order to improve the quality of spirometry. In addition, a change was made to require copies of spirometry reports to be provided to the department along with the health assessment form. The purpose of this change was to assist medical practitioners to identify a change in the individual's lung function over time. DNRM has consulted with the Thoracic Society of Australia and New Zealand to scope options for a practice-based, spirometry accreditation program for those NMAs in general medical practices and occupational health clinics. The department is currently developing a proposal for an accreditation program for the taking and reading of spirometry under the scheme. Consultation on this proposal will include ascertaining

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				stakeholder views on the merits of adopting gas transfer testing for screening.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	Mandatory screening	Strongly supports implementation of mandatory lifelong screening of all workers exposed to coal mine dust and silica.	The Monash review recommended that the Coal Mine Workers' Health Scheme be made available to former workers. The department will be developing proposals and consulting with stakeholders on how that recommendation can be implemented.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	Dust exposure limits	Concerned that occupational exposure limits are inconsistent between jurisdictions and recommends a thorough review of the limits.	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	Mandatory reporting	Mandatory reporting should be required of all occupationally acquired dust diseases of all types (not only CWP) to a national registry on occupational lung disease.	Regulatory changes that commence on 1 January 2017 will require a mining company to report a range of coal mine dust lung diseases to the department. In addition, enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations will also ensure diagnosis of coal mine dust lung diseases are reported to the department through NMA health assessment reports. The data will be available and readily reportable to any national registry should one be established.
006	Thoracic Society of Australia and New Zealand and Lung Foundation Australia	Referral to specialists	GP training materials should be developed and all coal miners presenting with respiratory symptoms, new radiological abnormalities and/or a decline in lung function greater than that predicted using the NIOSH algorithm should be referred for assessment to a respiratory specialist physician; ideally with training and/or qualifications in occupational lung disease.	The department will be implementing the Monash review recommendation to develop clinical guidelines for follow-up investigation and referral to an appropriately trained respiratory or other relevant specialist of suspected coal mine dust lung disease in current or former coal mine workers. In addition, the Monash review recommends doctors performing health assessments should undergo training to ensure a suitable standard of competence. The Monash University developed a fact sheet for GPs which was circulated via Queensland Health's Chief Health Officer Alert and via email to all NMAs.
007	Stanley William Wilson	Coal industry experience and lung condition	Did not receive regular chest X-rays during his 30 year career that ended in 1997. Referred to a specialist in 2013 and has	In 1982-83, health surveillance in the Queensland coal mining industry was focussed on pre-employment screening for respiratory conditions and lung disease. Chest X-rays were compulsory for all persons entering the industry, however ongoing health surveillance

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			emphysema caused by smoking and coal dust exposure.	was not compulsory before 1993. At that time, the Coal Board issued directives to mandate the ongoing health surveillance of the workforce at periods not exceeding five years. The Monash review recommended that participation in the health scheme be offered to retired workers. DNRM is currently considering options to ensure former and retired workers can access health assessments after their employment has ended. As an interim step, DNRM has progressed regulatory amendments that come into effect on 1 January 2017 that provide retiring coal workers with the opportunity to have a retirement examination within three months of their retirement.
008	Neil Whittaker	Longwall machinery	Increase in production has resulted in increased dust. Has observed very dusty longwall shearers. Based on extensive experience as a fitter in underground mines internationally, recommends that dust suppression needs to be addressed in machinery design.	Between 2014 and 2016 the department requested all underground coal mines to provide dust monitoring data covering the period 2000-14. The department analysed the results and found there was no clear correlation between production and dust exceedance rate. DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent coal mine dust lung disease.
009	Helen Gibson	Health monitoring of people at risk of coal dust exposure	Highlights the dust exposure risk for a range of occupations associated with coal. It is emphasised within this analysis that all personnel associated with the exploration, production, transportation and utilisation of coal is at some kind of risk and that the health of all these people needs to be checked and monitored on a regular timeframe.	Following a self-assessed survey conducted by DNRM on mines' dust management, the department identified that a comprehensive monitoring strategy should involve the concept of similar exposure groups (SEGs). SEGs are defined as a group of workers who have the same general exposure to risk. Such as the similarity and frequency of the tasks they perform, the materials and processes with which they work, and the similarity of the way they perform those tasks. Since November 2010, employers have been required to specify a worker's SEG in the health assessment form. The purpose of this was to inform decisions about whether a miner is in a dust-exposed job. The recent Monash review has identified that this requirement was poorly completed, or in some case, not completed at all. The Monash review recommended that the criteria to determine workers at risk from dust exposure should be based on past and

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				current underground coal mines and designated work categories in open-cut coal mines and coal handling and preparation plants. This recommendation includes the proposal that criteria to determine job categories at risk from dust exposure should be standardised across Queensland and reviewed regularly to reflect changes in level of risk. The department supports all of the Monash review recommendations and is taking necessary action to address these. Occupational health and safety of workers in related operations not part of the coal mine such as transportation of coal by rail or exploration is not regulated by the *Coal Mining Safety and Health Act 1999* and those workers are not part of the Coal Mine Workers' Health Scheme. For these workers other regulatory frameworks apply such as the *Transport (Rail Safety) Act 2010* and the *Work Health and Safety Act 2011*.
009	Helen Gibson	Dust monitoring and reporting	Monitoring and control of dust levels in all aspects of the exploration, extraction (underground and open cut), treatment, transport and storage of coal be a strict requirement for all mine owner /operators with reporting on a weekly basis to the Queensland State mines inspectorate or more frequently if required.	DNRM is working with industry and unions to develop a recognised standard for respirable dust monitoring in addition to a new dust reporting database. The recognised standard for monitoring requires mines to conduct baseline monitoring and identify similar exposure group (SEGS) across the whole mine site (both surface and underground). The ongoing monitoring frequency will be risk based but it will include periodic sampling for all areas and locations. All mine sites, both surface and underground will be required by law as of 1 January 2017 to report respirable coal and silica dust monitoring data at least once every three months for development and longwall operations, and as required under the standard for other areas at a coal mine. Additionally, mine sites will be required to report single exceedances of the occupational exposure limit to a mines inspector and undergo a process of analysing and resampling the exceedance. Monitoring and control of dust levels in relation to non-occupational dust exposure from coal mines or other related operations such as transport and off-site storage is not regulated under the *Coal Mining Safety and Health Act 1999*, therefore reporting to the Mines Inspectorate would not be appropriate. The Department of

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				Environment and Heritage Protection (EHP) regulates non-occupational air quality under the *Environmental Protection Act 1994.*
009	Helen Gibson	Dust control	A code of practice for dust emissions and their control for surface mines, quarries and exploration sites should be developed if it is not already addressed.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent coal mine dust lung disease.
009	Helen Gibson	Independent dust monitoring	The Queensland State mines inspectorate should undertake independent monitoring of dust levels in all aspects of the coal industry on a regular basis (perhaps fortnightly) as a cross check on results obtained by the owner/operators and that all results and analysis being published.	Mine sites engage suitably qualified independent companies to conduct personal monitoring and report these results back to the mine. These reports are supported by field observations and recommendations to control exposure. It is the mines' responsibility to review these results, consider recommendations and control exposures. The department is not aware of any evidence to suggest that the monitoring is biased or influenced by the mining companies. The results provided by monitoring companies have clearly identified exceedances. The department has acted on these exceedances during recent data reviews. DNRM is working with industry to develop a recognised standard for dust control that will be implemented in 2017.
009	Helen Gibson	Training of medical practitioners	The medical practitioners who are used to provide health checks on coal workers should be specifically trained and skilled in diagnosis of CWP, through the use of appropriate radiological methods, interpretation, etc. in order to identify the early onset of CWP.	DNRM is currently considering future NMA training options as recommended by the Monash review. This would include processes for referring chest X-rays to radiologists or respiratory physicians as part of a CWP screening program.
009	Helen Gibson	Independence of medical practitioners	The medical practitioners who are used to provide health checks on coal workers should be entirely independent and not employed by the coal companies.	The department is developing an improved model for nominated medical advisers. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit.

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009	Helen Gibson	Research into dust control	Appropriate methods to suppress and eliminate dust (coal, and other) throughout the coal mining process be researched and implemented immediately as a matter of urgency. This would include processing, transport, stockpiles, loading at port facilities, etc.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent coal mine dust lung disease. Industry will need to comply with the standard and demand for new solutions could drive research and development of new technologies.
009	Helen Gibson	Funding monitoring of coal mines	A levy per tonne (of coal produced) on mine owner/operators within Queensland should be considered to part fund the monitoring of the entire coal mining process by the State mines inspectorate.	The Mines Inspectorate is currently funded by a levy on the mining industry paid to the department annually based on the number of workers in the industry and the budgeted cost of services.
009	Helen Gibson	Facility to train personnel monitoring coal industry	An accredited, world recognised training facility should be established in Queensland to provide training of relevant staff to undertake the monitoring of the coal mine-to-end user process.	The department provides regular training and development to the mines inspectors to ensure they maintain the latest skills and understanding of the issues facing the industry. The courses and training programs undertaken by inspectors vary. During 2015-16, around 40 different training courses were delivered to inspectors. Also within DNRM is the Safety in Mines Testing and Research Station (SIMTARS). It is a resource available to the government, mining companies, mining equipment manufacturers and suppliers to the mining industry. SIMTARS supports the Mines Inspectorate through provision of expert advice and assistance with accident investigations. It is also an accredited Registered Training Organisation and provides nationally recognised training and qualifications in mine safety to thousands of mine workers in Australia and overseas.
009	Helen Gibson	Oversight CWP reference group	A CWP reference group should be established to oversee the development and implementation of a mining code of conduct, maximum permissible dust levels, monitoring of in-mine dust readings and analysis, the implementation of appropriate health monitoring and associated training of medical staff, monitoring of confirmed	The department is working closely with the Coal Mining Safety and Health Advisory Committee (CMSHAC) which is a statutory, tripartite group that provides advice and makes recommendations to the Minister to promote and protect the safety and health of coal mine workers. CMSHAC periodically reviews the effectiveness of legislation in controlling health and safety risk. It is also responsible for establishing the coal mining competencies required for statutory positions in mines.

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			CWP sufferers and analysis of all records relevant to this medical condition.	Committee members are nominated and appointed by the Minister based on Queensland's tripartite consultative model for mining with the aim of ensuring key stakeholders are engaged in all aspects of mine safety and health management and the legislative framework. Members include representatives from the Mines Inspectorate, mine workers and mine operators and is chaired by the independent Commissioner for Mines Safety and Health. Union, employer and departmental representatives from CMSHAC are currently working through a range of measures to tackle coal workers' pneumoconiosis.
009	Helen Gibson	Dust exposure in non-coal mining operations	Investigation should be extended to the impact of inhalation of rock dust by miners and other staff in open cut and underground mines within Queensland including quarries, metalliferous and non-metalliferous mines.	In addition to coal mine dust lung disease, the department is considering the recommendations of the Monash review in the context of workers in quarries, metalliferous and non-metalliferous mines regulated under the *Mining and Quarrying Safety and Health Act 1999.* This consideration is currently being made in consultation with the Mining Safety and Health Advisory Committee which is the equivalent of CMSHAC for metalliferous and non-metalliferous mining and quarrying (albeit with different members). In addition, regulatory changes that commence on 1 January 2017 will require a mining company to report a range of mine dust lung diseases to the department.
009	Helen Gibson	Dust exposure levels	Dust exposure levels should be as low as 1.5mg/cubic metre to align with USA standards in the interests of worker health and mine safety.	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
009	Helen Gibson	Health and dust surveillance	Recommends establishment of a database which correlates dust monitoring results and health assessment data.	The department supports all 18 of the Monash review recommendations which includes that DNRM conduct ongoing individual and group surveillance of health data collected under the scheme, detect early CMDLD and analyse trends to disseminate to employers, unions and coal mine workers. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.

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				In addition, the department is currently developing a dust monitoring database that it anticipates will enable analysis of worker health data against dust exposure data.
009	Helen Gibson	Automation	Advises that the introduction of automated longwall extraction methods could minimise coal dust exposure.	The accepted industry standard for achieving an acceptable level of risk is by working through the hierarchy of control. It stipulates that best and most effective protection from harm is through elimination – that is by preventing the hazard from occurring in the first place. An example of an elimination control measure in relation to dust generation and exposure is the automation of mining in areas of high risk of respirable dust and silica exposure.
009	Helen Gibson	Coal dust risk to broader community	Discusses the risk of coal dust affecting communities in proximity to coal mines, coal transport corridors stockpiles and loading facilities. Recommends that these areas should also be monitored for dust exposure subject to regular inspections by Government.	The Department of Environment and Heritage Protection (EHP) regulates non-occupational air quality under the *Environmental Protection Act 1994.* Information is available to the public on EHP's webpage: http://www.ehp.qld.gov.au/management/coal-dust/. Notably in 2013, the then Department of Science, Information Technology, Innovation and the Arts commenced an investigation into coal dust levels along the Western and Metropolitan Rail Systems in South-East Queensland. The monitoring results showed that ambient particle concentrations complied with ambient air quality objectives at all rail corridor monitoring sites during both the pre and post-veneering monitoring periods. The major influence on the levels of particles was not rail transport emissions, but other urban particle emission sources. Further information on the study is available at www.ehp.qld.gov.au/management/coal-dust/monitoring. Ongoing air quality monitoring continues at Cannon Hill Railway Station in Brisbane, Jondaryan west of Toowoomba, and the Ports of Gladstone and Brisbane.
010	Jason Mathewson	No action on dust exposure threshold exceedances	There are coal mines that are knowingly exceeding dust exposure limits and no action has been taken. Not confident dust levels are reduced when coal mines with exceedances are issued directives to reduce dust levels.	The Mines Inspectorate has been active in regulating coal dust levels through the utilisation of a range of compliance tools and raising awareness. Since 2013 the Mines Inspectorate has issued 36 directives to nine underground coal mines. This included directing a mine to review its safety and health management system, review the effectiveness of dust controls, to reduce cutting speed and two to suspend operations.

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				Mines placed under directive are required to undertake onerous monitoring regimes and stringent reporting processes until they can demonstrate that exposures have been controlled to acceptable levels. This requires a minimum of three consecutive months of demonstrated compliance. Notwithstanding this, the department acknowledges that more needs to be done and is implementing immediate regulatory amendments to strengthen respirable dust monitoring requirements. Regulatory amendments are due to commence in January 2017 which will introduce the new requirement for inspectors to be advised every time dust concentrations exceed prescribed levels. This new requirement also requires the site senior executive to ensure the cause of high average concentration is investigated and the results of the investigation are recorded and analysed to identify trends and issues with the coalmine's safety and health management system.
010	Jason Mathewson	Dust monitoring	Monitoring of coal dust levels are not reliable. Monitors are placed on workers in areas with little dust exposure. Recommends independent dust monitoring that captures greater detail on the worker, task and focus on areas of the mine with higher risk of dust exposure. All underground workers should continuously have a personal dust monitor that provides real time results.	DNRM is working with industry to develop a recognised standard for dust monitoring in addition to a new dust reporting database. As of 1 January 2017 all mines will be required to provide their exposure data to the department at prescribed intervals. The department will review and report this data. In addition a tripartite standing dust committee will meet quarterly to review the data and make recommendations to CMSHAC (as required). DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
010	Jason Mathewson	Workers pressured to skip safety checks	Was encouraged to skip or take short-cuts in pre-start checks when operating continuous miner. These checks are part of the mine's safety and health management system which ensure dust management systems like water sprayers, ventilation and filters are regularly checked.	The Mines Inspectorate takes any behaviour putting workers at risk very seriously. On occasion, the Mines Inspectorate has issued directives to suspend or not commence operations to mines where pre-start checks have not been conducted and other procedures have not been followed. In relation to respirable dust, the Mines Inspectorate has issued a directive to a mine to suspend operations where pre-start checks

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				have not been conducted. The inspectorate has also issued a directive not to re-commence operations where issues have been identified concerning water supply for dust management.
010	Jason Mathewson	PPE	Dust masks should not be relied upon for dust exposure mitigation.	The accepted industry standard for achieving an acceptable level of risk is by working through the hierarchy of control. It stipulates that best and most effective protection from harm is through elimination – that is by preventing the hazard from occurring in the first place. If elimination is not reasonably practicable, risk must be minimised by working through the alternatives in the hierarchy, from the highest to the lowest. PPE is the lowest form of control and does not remove the hazard. PPE is an active control, as it requires active involvement by the wearer in understanding and following procedure (for example, donning PPE in presence of dust, ensuring a good fit, replacement if damaged etc.). Active controls are vulnerable to oversight by the person applying relevant procedure. DNRM is focussed on ensuring higher level controls are implemented to ensure respirable dust levels are below prescribed levels. If respirable dust masks are used, it is essential that adequate seal enforcement is achieved. This requires a worker to be clean shaven. DNRM provides a consistent message that respiratory protective equipment should only be used when it is a part of a respiratory protection program that has been established in accordance with AS1715. This requirement has been reinforced in the recognised standard for dust control due for release in early 2017.
010	Jason Mathewson	Doctors	Supports health assessments by health professionals independent of industry appointed under the coal mining legislation. Doctors should complete an exam to participate in the scheme with refresher exams every five years.	The department is developing an improved model for nominated medical advisers. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit.
010	Jason Mathewson	Inspectors	Legislation needs to be amended so that Inspectors are not protected from being prosecuted. Concerned Inspectors don't	DNRM is not aware of any information that would suggest that inspectors have failed to take compliance action so as not to risk future job opportunities. Further, DNRM denies that inspectors are

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			want to take compliance action because they don't want to risk future job opportunities or are being pressured by government not to impact production.	pressured by government not to take compliance action that would impact production. On numerous occasions, the Mines Inspectorate has taken compliance action, including issuing directives which significantly impact production and a mine's revenue. In exercising their powers, inspectors are required to comply with the code of conduct applicable to government employees and to complete training relating to the code of conduct. Government employees who breach the code of conduct or their ethical obligations in exercising their duties are liable to disciplinary action. In some cases, this may involve referral to the Crime and Corruption Commission and prosecution.
010	Jason Mathewson	Procedure for dust level exceedances	Recommends that in areas of coal mines where dust levels exceed limits, operations are immediately ceased. All safety officers are to be informed and corrective actions taken before an inspector's approval is sought to restart operations.	The department's compliance policy provides for a range of compliance actions to bring a mine back into compliance, including issuing a directive or directing the SSE to attend a compliance meeting. Suspending operations may seem like an intuitive option to bring dust concentration levels below exceeded level, however the inspectorate must consider the full spectrum of hazards concerning the mine's operation. This is particularly evident for longwall operations which other hazards may include gas management, spontaneous combustion and strata problems. All factors are considered before directing a mine to suspend operations. In some cases, the safest option may be to allow a mine to complete its production activities on a longwall panel before suspending the operation to address dust level. Further, dust monitoring cannot be effectively carried out when a mine is not in production. Without ongoing monitoring it is impossible to assess the effectiveness of controls. The department is putting in place a number of measures to strengthen respirable dust management requirements. Regulatory amendments are due to commence in January 2017 which will introduce the new requirement for inspectors to be advised every time dust concentrations exceed prescribed levels.
010	Jason Mathewson	Risk management	Suggests every coal mine have its risk management of coal dust reviewed by a	Queensland's regulatory framework requires each mining operation to have a risk based safety and health management system. The

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			party of industry safety reps, coal inspector and independent party endorsed by industry safety and health reps, CFMEU and the Commissioner for Mines Safety and Health.	framework enables the site senior executive, site safety and health representatives, industry safety and health representatives, mines inspectors, authorised officers and mine workers to play a proactive role in reviewing, inspecting and auditing the safety and health management system.
010	Jason Mathewson	Oversight of dust monitoring by panel	The Commissioner for Mines Safety and Health should form a dust monitoring and black lung review panel consisting of stakeholder representative from CFMEU, coal mines, inspectors, SIMTARS etc.	The department is working as part of the Coal Mining Safety and Health Advisory Committee (CMSHAC) which is a statutory, tripartite committee that provides advice and makes recommendations to the Minister to promote and protect the safety and health of coal mine workers. CMSHAC periodically reviews the effectiveness of legislation in controlling health and safety risk. It is also responsible for establishing the coal mining competencies required for statutory positions in mines. Committee members are nominated and appointed by the Minister based on Queensland's tripartite consultative model for mining with the aim of ensuring key stakeholders are engaged in all aspects of mine safety and health management and the legislative framework. Members include representatives from the Mines Inspectorate, mine workers and mine operators and is chaired by the Commissioner for Mines Safety and Health. Union, employer and departmental representatives from the CMSHAC are currently working through a range of measures to tackle coal workers' pneumoconiosis.
010	Jason Mathewson	Research	The Minister for Natural Resources and Mines must continually have SIMTARS and other relevant parties investigate new ways to greatly reduce the amount of dust in all areas of underground coal mines.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. Industry will need to comply with the standard and demand for new solutions could drive research and development of new technologies. SIMTARS does conduct research into mine safety. For example, SIMTARS is progressing the intrinsically safe certification of real time dust monitors for use in Queensland underground coal mines.
010	Jason Mathewson	X-rays	Chest x-rays should be taken every five years, immediately after retirement and then every five years after that. All x-rays	DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program. Radiologists would

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			should be reviewed by a trained and experienced radiologist to ILO standard.	also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis. From 1 January 2017, all underground workers or workers who have worked underground will be required to have five yearly chest X-rays. Aboveground workers will be required to have a chest X-ray every 10 years and upon permanent retirement a worker is entitled to a chest X-ray, at the expense of the worker's employer, within three months before or after retirement.
010	Jason Mathewson	Reporting	All cases of CWP or other work related lung problems should be immediately reported to the mining company, safety and health representatives, CFMEU, Minister, Chief Inspector, Commissioner and other oversight panels.	Regulatory changes that commence on 1 January 2017 will require a mining company to report a range of coal mine dust lung diseases to the department. In addition, enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations will also ensure diagnosis of dust diseases are reported to the department through NMA health assessment reports. The data will be available and readily reportable.. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.
010	Jason Mathewson	Lung function - Spirometry	All lung / breathing tests must be conducted by personnel that a trained, assessed and certified.	The Monash review identified significant issues with the spirometry screening component of the Coal Mine Workers' Health Scheme. It made several related recommendations including that spirometry should be conducted only by accredited practitioners who undertake initial and on-going training and quality of tests regularly audited. Following the Monash Review, changes were made to the health assessment form to clarify that spirometry must be undertaken by appropriately trained operators to the standard outlined in Queensland Health: Spirometry (Adult) Guideline, in order to improve the quality of spirometry. In addition, a change was made to require copies of spirometer reports to be provided to the department along with the health assessment form. The purpose of this change was to assist medical practitioners to identify a change in the individual's lung function over time. DNRM has consulted with the Thoracic Society of Australia and New Zealand to scope options for a practice-based, spirometry

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				accreditation program for those NMAs in general medical practices and occupational health clinics. The department is currently developing a proposal for an accreditation program for the taking and reading of spirometry under the scheme. Consultation on this proposal will include ascertaining stakeholder views on the merits of adopting gas transfer testing for screening.
011	Queensland Nurses' Union (QNU)	Regulatory framework	States that right of entry provisions enabling unions to inspect potential hazards on worksites are strictly enforced and that procedures preventing CWP are not strictly enforced.	DNRM acknowledges the important role of industry safety and health representatives in mine safety and health and recognises that the powers they have under the Act are a tool for ensuring safety and health standards are upheld in mining operations. Those union representatives are at liberty to exercise their powers within the limits of those powers. However, it is important that those powers are used appropriately and if it is considered that a union representative has exceeded their power, the Mines Inspectorate has a responsibility to address that.
011	Queensland Nurses' Union (QNU)	Regulatory framework	Notes concerns about the use of a self-regulation scheme. They suggest a lack of integrity in the system and a lack of concern for the workforce.	Queensland has a risk based-approach to mine site safety and health. Mine operators are required to proactively review their safety and health management system to ensure the system is effective and can constantly adapt to the changing environment and interdependencies of complex mining operations. The Queensland framework enables the site senior executive, site safety and health representatives, industry safety and health representatives, mines inspectors, authorised officers and mine workers to play a proactive role in reviewing, inspecting or auditing the safety and health management system.
011	Queensland Nurses' Union (QNU)	Lung function testing and spirometry	Supports the implementation of the Monash Report recommendations. In particular, further training for registered nurses and other health practitioners on the spirometry equipment is recommended, as well as greater testing of this equipment as outlined in the Monash Review.	The Monash review identified significant issues with the spirometry screening component of the Coal Mine Workers' Health Scheme. It made several related recommendations including that spirometry should be conducted only by accredited practitioners who undertake initial and on-going training and quality of tests regularly audited. Following the Monash Review, changes were made to the health assessment form to clarify that spirometry must be undertaken by appropriately trained operators to the standard outlined in

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				Queensland Health: Spirometry (Adult) Guideline, in order to improve the quality of spirometry. In addition, a change was made to require copies of spirometer reports to be provided to the department along with the health assessment form. The purpose of this change was to assist medical practitioners to identify a change in the individual's lung function over time. DNRM has consulted with the Thoracic Society of Australia and New Zealand to scope options for a practice-based, spirometry accreditation program for those NMAs in general medical practices and occupational health clinics. The department is currently developing a proposal for an accreditation program for the taking and reading of spirometry under the scheme. Consultation on this proposal will include ascertaining stakeholder views on the merits of adopting gas transfer testing for screening.
012	Daniel O'Connor	Safety and health improvements to reduce dust exposure	Supports the hierarchy of control reduce exposure to coal dust, and in particular supports improved coal mine ventilation and dust suppression. Recommends improvements in both these areas, and promotes a focus on keeping coal workers informed on dust matters.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent coal mine dust lung disease. DNRM understands that most companies regularly update workforce on dust results. Coal workers also ask questions of DNRM mine inspectors during their inspections.
013	Clean Air Wynnum	Coal dust risk to broader community	The regulation of coal dust should include coal dust in transport and storage, not just the mines. Raises concerns regarding the transport of coal on rail lines through Brisbane and its storage at the port of Brisbane. In particular, they are concerned with the movement of airborne coal dust into residential areas and health impacts on the community.	The Department of Environment and Heritage Protection (EHP) regulates non-occupational air quality under the *Environmental Protection Act 1994.* Information is available to the public on EHP's webpage: http://www.ehp.qld.gov.au/management/coal-dust/. Notably in 2013, the then Department of Science, Information Technology, Innovation and the Arts commenced an investigation into coal dust levels along the Western and Metropolitan Rail Systems in South-East Queensland. The monitoring results showed that ambient particle concentrations complied with ambient air quality objectives at all rail corridor monitoring sites during both the pre and post-veneering monitoring periods. The major influence on the levels of particles was not rail transport emissions, but other urban particle emission sources. Further

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				information on the study is available at www.ehp.qld.gov.au/management/coal-dust/monitoring. Ongoing air quality monitoring continues at Cannon Hill Railway Station in Brisbane, Jondaryan west of Toowoomba, and the Ports of Gladstone and Brisbane.
014	Australian Institute of Occupational Hygienists, Inc. (AIOH)	Dust management plans	AIOH recommend that mine operators must develop and implement an evidence based dust management plan. They also support the introduction of personal fit testing requirements.	The *Coal Mining Safety and Health Act 1999* requires the site senior executive for each coal mine to develop a safety and health management system. In part, the safety and health management system includes the following (see section 89 of the Coal Mining Safety and Health Regulation 2001 for complete requirements with respect to dust): • ensures workers' exposure to respirable dust is at acceptable levels and does not exceed an average concentration equivalent to an 8-hour period • reviews dust control systems to minimise exposure if exposure is above acceptable levels • monitors and records concentrations of respirable dust and silica • makes records available to workers • suppresses airborne dust so a person's safety is not threatened (e.g. reduced visibility). DNRM is working with industry to develop a recognised standard for dust control and monitoring, which will support site senior executives to develop and implement safety and health management systems.
014	Australian Institute of Occupational Hygienists, Inc. (AIOH)	Monitoring	Dust monitoring is critical to reducing risk. Recommends including the application of quality assurance principles, feedback of monitoring results to industry and workers. Noted that fixed dust monitors cannot replace personal sampling devices.	DNRM is working with industry to develop a recognised standard for dust monitoring in addition to a new dust reporting database DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
014	Australian Institute of Occupational Hygienists, Inc. (AIOH)	Health and dust surveillance	Health surveillance provides an important feedback loop. Fit for work assessments and health screening should be separate.	The department supports all 18 of the Monash review recommendations which includes that DNRM conduct ongoing individual and group surveillance of health data collected under the

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			Surveillance should compare health data and dust exposure for coal and silica.	scheme, detect early CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account. In addition, the department is currently developing a dust monitoring database that it anticipates will enable analysis of worker health data against dust exposure data.
014	Australian Institute of Occupational Hygienists, Inc. (AIOH)	Exposure limits	Support a review of Safe Work Australia dust exposure standards based on proper scientific review and relevant to the Australian mining context.	DNRM is supportive of Safe Work Australia's (SWA) review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings. The Mines Inspectorate provided input to SWAs initial consultation and continue to support and provide feedback to the review.
014	Australian Institute of Occupational Hygienists, Inc. (AIOH)	Training requirements	Only independent, experienced, and Certified Occupational Hygienists (COH)® should design, plan and report on the assessment of workplace dust exposures.	The department is proposing to use this competency for the standard for the recognised standard for dust monitoring.
015	Dr Brian Plush	Prevalence of disease	Believes that many cases of CWP remain undiagnosed.	DNRM is committed to ensuring early detection of existing CWP cases. As an interim measure, all underground coal mines are offering their workers new checks on current chest X-rays or new X-rays if the X-ray was taken more than two years ago. All chest X-rays are dual read, first by an Australian radiologist to the ILO Classification and then assessed by NIOSH approved readers at the University of Illinios at Chicago. DNRM encourages any coal mine worker who has concerns about their health to talk to their general practitioner The Monash review recommended that participation in the health scheme be offered to retired workers. DNRM is currently considering options to ensure former and retired workers can access health assessments after their employment has ended. As an interim step, DNRM has progressed regulatory amendments that come into effect on 1 January 2017 that provide retiring coal workers with the

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				opportunity to have a retirement examination within three months of their retirement. To ensure a better understanding of CWP occurrences across the industry, regulatory changes will also require a mining company to report a range of coal mine dust lung diseases to the department. In addition, DNRM is investigating options to further improve reporting and implement enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.
015	Dr Brian Plush	Dust exposure limits	There is no proven 'safe' level of dust exposure. Research into what is a 'safe' level of exposure is required.	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
015	Dr Brian Plush	Senate Select Committee on Health recommendations	Concerned that recommendations from the Senate Select Committee on Health have not been implemented. Suggests further steps, including a broader focus on all particulate matter-producing industries, greater testing and research, and establishment of a particulate matter exposure register that financially supports those diagnosed with CWP.	On 28 April 2016, the Senate Select Committee on Health released its report on CWP. The report made twenty recommendations a number of which, particularly those relating to NMAs, are effectively being addressed through implementation of the Monash review recommendations. Other recommendations are addressed by the government's action on dust management.
016	Vale Australia Pty Ltd	CWP cases	Note the four current cases of CWP and the measures undertaken by the company in relation to screening and prevention. Supports the recommendations of the Monash Review.	DNRM notes that the cases referred to by Vale are reflected in the 17 confirmed cases.
017	Royal Australian and New Zealand College of Radiologists (RANZCR)	Referral to radiologists	Notes that there has been inconsistent clinical history provided in the past as part of a referral to a radiologist. A diagnosis of CWP cannot be made solely on the basis of a screening X-ray.	RANZCR's comments and recommendations are consistent with the findings and recommendations of the Monash review in relation to X-rays (Recommendation 11). Effective from 1 May 2016, DNRM amended the health assessment form to clarify that examining doctors must ensure the X-ray request

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			Recommend that appropriate clinical information be provided on referral forms, specifically past medical history including any respiratory illness, occupational history and smoking history.	form clearly states the subject is a coal mine worker and the film should be examined for pneumoconiosis under the ILO International Classification of Radiographs of Pneumoconioses. This issue of referral information will be considered further as part of the key focus on medical practitioners and assessments.
017	Royal Australian and New Zealand College of Radiologists (RANZCR)	X-ray imaging	Recommends that X-rays should be taken by a qualified radiographers or other appropriate persons. Equipment used to capture images must meet the appropriate standards including those under Diagnostic Imaging Accreditation Scheme (DIAS) and RANZCR Standards of Practice for Diagnostic and Interventional Radiology Version 10.1.	RANZCR's recommendations are consistent with those of the Monash review in relation to X-rays (Recommendation 11). DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would only be taken by qualified radiographers and the technical aspects of taking X-rays would be in accordance with Australian requirements and international best practice.
017	Royal Australian and New Zealand College of Radiologists (RANZCR)	X-ray reading	Suggests that X-rays were not always sent to a radiologist and may have been reviewed by other medical practitioners, such as NMAs. It is recommended that only a clinical radiologist should review an X-ray due to their specialist training.	Effective from 1 May 2016, DNRM amended the health assessment form to clarify that all chest X-rays under the scheme must be undertaken by a specialist radiology clinic and must be read by a specialist radiologist.
017	Royal Australian and New Zealand College of Radiologists (RANZCR)	Best practice screening program	Suggests BreastScreen program may serve as a model for best practice screening with additional features: • training for participating radiologist on induction • dual reading, and adjudication • on-going clinical audit process to improve performance • central collation of data and previous images for comparison purposes	RANZCR's comments are consistent with the recommendations of the Monash review in relation to X-rays (Recommendation 11). DNRM has been working closing with BreastScreen Queensland and is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that these noted features would be reflected in the new X-ray screening program.

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			Also propose that ongoing clinical feedback to participating radiologists is the most important aspect of a property functioning screening program.	
018	Queensland Resources Council (QRC)	Cause of CWP cases	Suggests there are two main contributing factors to the 're-identification' of CWP: • risk normalisation - when a workforce becomes so used to dealing with a hazards (dust exposure) that it is considered a normal part of the workplace and loses significance • drift to failure - when events accumulate and go unnoticed because it is not recognised that together these events can result in a 'drift to failure'.	These comments are consistent with the Monash review, which concluded that there were major system failures at all levels of the design and operation of the respiratory component of the health scheme. The reviewers also noted that these and other deficiencies with this aspect of the scheme were confounded by the belief that CWP had been eliminated in Queensland, ultimately leading to a lack of rigor applied to detect such diseases.
018	Queensland Resources Council (QRC)	CWP Cases	Suggests there needs to be an available synopsis of these confirmed cases so that industry can learn as much as possible from them. DNRM should report summarised de-identified information to industry to inform the development of effective measures to address these conditions. Suggests there is also a need to improve the overall feedback of health information to the mine site, with appropriate privacy protections.	DNRM may disclose the content of a coal mine worker's record for research purposes, but only if the identity of the worker is protected. This disclosure of anonymised details of cases may unintentionally and indirectly identify workers. Consequently DNRM only currently publishes up-to-date figures on confirmed cases of CWP on the DNRM website at: www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/pneumoconiosis. The department supports all 18 of the Monash review recommendations which includes that DNRM conduct ongoing individual and group surveillance of health data collected under the scheme, detect early CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.
018	Queensland Resources Council (QRC)	Dual reading of X-rays	Suggests dual-reading to the ILO classification appears to be resulting in a significant number of false positives. Also	The department is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have

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			suggests it appears that HRCT has become necessary for certainty of diagnosis. Suggests a need to establish a clear diagnostic pathway, including quality analysis of the radiographs, to minimise the potential for incorrect diagnosis.	successfully completed an ILO training program. Radiologists would also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis. It is also envisaged that as part of the new program, if a potential case is identified, an appropriate diagnostic procedure is undertaken before a diagnosis is given to provide greater assurance.
018	Queensland Resources Council (QRC)	NMAs	Notes that the Minister announced in March that changes to the NMA system would be progressed as a priority but industry in still yet to see a firm proposal.	Amendments to the Coal Mine Safety and Health Regulation 2001 will commence on 1 January 2017. These changes include clarifying that all medical examinations will be performed by a person qualified and competent to conduct the examination. The department is developing an improved model for nominated medical advisers. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit. It is anticipated that improved programs for spirometry and x-rays will further inform the implementation of the recommendations around medical assessments and practitioners. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program.
018	Queensland Resources Council (QRC)	2013 Regulatory Impact Statement (RIS)	Suggests there were reviews prior to that undertaken by the Monash Review that had raised concerns about the functioning of the Scheme, including the 2013 RIS. It is noted that the RIS identified problems with the experience and expertise of NMAs. QRC suggests that no changes were made, despite support from industry to do so. Suggests that it demonstrates that DNRM was concerned that the scheme was to some extent “broken”. Suggests that it may be instructional for the Committee to consider the reasons why the regulatory amendments were never progressed.	The 2013 Queensland’s mine safety framework consultation regulatory impact statement (RIS) sought feedback on options to amend mining safety and health legislation, with a focus on the possible adoption of the Model Work Health and Safety Act (Model Act). However, the RIS also included a number of other proposals not related to the Model Act, which were based upon local issues identified by stakeholders. One proposal included in the paper related to the Coal Mine Worker Health Scheme, and the paper canvased problems with the current scheme, along with a proposed solution. The problems canvassed included: • NMAs have little or no experience or expertise in occupational medicine, nor do they have knowledge of the mine conditions or the coal mining industry • the appeal process is problematic - where assessments obtained from the NMA and the worker conflict, and DNRM is required to arrange and pay for the third medical

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				• employers avoiding paying for medicals by requiring workers to complete the health assessment before being considered for the job. The solution in the paper was to refocus the scheme to address the hazards such as dust and noise by: • making the decision about whether a coal mine worker is fit for work at a particular mine site the responsibility of the mine's SSE, based upon an assessment by a qualified medical practitioner • requiring any future disputes about conflicting health assessment reports to be resolved under the *Fair Work Act 2009* • requiring medical practitioners to have appropriate qualifications and/or experience to carry out health surveillance assessments • requiring medical practitioners to have experience in the mining industry and if necessary appropriate training in audiometry and spirometry • amending the approved form to focus on health surveillance concerns only. These changes did not progress for lack of tripartite support.
018	Queensland Resources Council (QRC)	Fitness for work	Notes that the interrelationship of the Health Scheme with fitness for work issues was identified by DNRM as a significant issue in the 2013 RIS, and rectifying the situation was, and still is, supported by the QRC.	This proposal to separate fitness for work from the health surveillance scheme was included in the 2013 RIS. The Monash review recommended focussing on the early detection of CMDLD and group health surveillance. DNRM has accepted the Review's recommendations and is currently considering options to implement improved models for health screening and surveillance of coal mine workers.
018	Queensland Resources Council (QRC)	Clinical guidelines and referral	Suggests that follow-up investigation and referral is required if the screening program is to be fully effective, however, doing so may be inconsistent with the decision in *Edwards v North Goonyella Coal Mines Pty Ltd* (QSC 2005) without regulation amendment. Suggests the ruling restricted the ability of a doctor to seek expert	The department supports the Monash review recommendation to develop clinical guidelines for follow-up investigation and referral to an appropriately trained respiratory or other relevant specialist of suspected coal mine dust lung disease in current or former coal mine workers. It is envisaged that amendments will be made to the regulation as required to implement the Monash review recommendations.

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			opinion on any potential health issues faced by a worker.	
018	Queensland Resources Council (QRC)	Reporting of CMDLDs	Suggests the obligation to report CMDLDs should extend to NMAs and be extended to require any occupationally related condition that indicates there may be a significant risk to health and safety at a coal mine to be reported to DNRM.	Regulatory changes that commence on 1 January 2017 will require a mining company to report a range of coal mine dust lung diseases to the department. In addition, enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations will also ensure diagnosis of coal mine dust lung diseases are reported to the department through NMA health assessment reports.
018	Queensland Resources Council (QRC)	Health Surveillance Unit	Suggests that the lack of reporting, and the sheer extent of the information backlog in entering health assessments, was an indication that the Health Scheme has drifted to a point of failure, if possibly a contributor to the failure itself. Notes an optical character recognition project to read scanned health assessment forms into the database was suspended in the 2014/2015 year. Notes the QRC response to the 2013 RIS highlighted the need to address the backlog.	The Monash review identified the large backlog of health assessments that were awaiting entry into the database as hampering accessibility to the records. However, all of these health assessments were reviewed by a nominated medical adviser and a report provided to the mine worker concerned, prior to forwarding to the department for storage. A project to use optical character recognition (OCR) software to automatically 'read' scanned health assessments into the CMWHS database was piloted in 2013–14. It was intended that the technology would reduce the backlog of un-entered health assessments. Despite the pilot, the project was unsuccessful and terminated in 2014-15 as there was no improvement to efficiency in comparison to the existing manual process. The department subsequently engaged additional staff to clear the backlog of health assessment forms to ensure all workers' health records are entered or scanned into the database by end of June 2017. The Monash review recommended that DNRM should conduct ongoing individual and group surveillance of health data collected under the scheme, to detect early CMDLDs and analyse trends to disseminate to employers, unions and coal mine workers. DNRM will invest in an improved system that enables improved records management and data analysis and maintains best practice security and privacy standards. To ensure that the improved system is fit for purpose, final design requirements will be finalised once policy enhancements to the health scheme are finalised.

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018	Queensland Resources Council (QRC)	NMAs	Supports Monash recommendation for a smaller pool of doctors but the number of doctors need to remain manageable, and not cost prohibitive, particularly for smaller contractors, so it is sustainable over time. Operators should maintain a choice over which doctors undertake health assessments for their operation. Suggests requirements for doctors to be set through policy or standards so as to be adaptable to changing requirements for health assessments.	The department is developing an improved model for nominated medical advisers. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit.
018	Queensland Resources Council (QRC)	Screening program	Suggests CMSHAC should undertake the discussion to identify which workers, in addition to underground workers, should undergo screening for CWP, and the frequency.	The Monash review recommended that the criteria to determine workers at risk from dust exposure should be based on past and current underground coal mines and designated work categories in open-cut coal mines and coal handling and preparation plants. This recommendation includes the proposal that criteria to determine job categories at risk from dust exposure should be standardised across Queensland and reviewed regularly to reflect changes in level of risk. The department supports all of the Monash review recommendations and is taking necessary action to address these. Regulatory amendments that commence on 1 January 2017 will require mandatory respiratory function and chest X-rays examinations on entry to the industry and at least every five years for underground workers and ten years for aboveground workers. The amendments will also provide retiring coal workers with the opportunity to have a retirement examination within three months of their retirement.
018	Queensland Resources Council (QRC)	Health Surveillance	Suggests DNRM should ensure any data collected under the Health Scheme is available for analysis and is reported to all of industry as part of a respiratory health surveillance program.	DNRM is investigating options to further improve reporting and implement enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.

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018	Queensland Resources Council (QRC)	Health Assessment Form	Suggests allowing the ILO reporting requirement to lapse was a significant failure of the Health Scheme.	The health assessment forms used between 1993 and 2001 included a section where the ILO Classification could have been recorded. The removal of this section from the form appears to have occurred when the Queensland Coal Board scheme transitioned to the existing scheme in place under the current legislative framework in 2001, following a revision of the form by a tripartite working group. Since 27 July 2016 the form requires that all chest X-ray reports must be completed using the prescribed ILO reporting template.
018	Queensland Resources Council (QRC)	Implementation of the Monash Review	DNRM should present an implementation plan for the recommendations, and progress against it should be reported on a regular basis through bulletins to major stakeholders.	To facilitate implementation, the department has identified five key focus areas within the 18 recommendations. These are chest X-rays (CXRs), spirometry, medical assessments and practitioners, electronic records management and surveillance. DNRM currently provides updates on the implementation of the recommendations to industry through the Coal Mine Safety and Health Advisory committee (CMSHAC), QRC safety and health meetings, SSE and other forums, and periodic communication to SSE and other stakeholders by the Chief Inspector of Coal Mines and Executive Director, Mine Safety and Health. The department also provides updates on progress through the DNRM website. DNRM will continue to consult with, and update, stakeholders on the implementation of the Monash review recommendations.
018	Queensland Resources Council (QRC)	Dust monitoring	Notes QRC supports initiatives within CMSHAC to expedite the approval of real time dust monitoring devices for use in underground mines in Queensland.	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
018	Queensland Resources Council (QRC)	Dust control forum	Notes QRC is anticipating a best practice dust control forum in accordance with the Senate Health Committee recommendations.	Data reported from respirable dust monitoring at all mines sites on a quarterly basis will be reviewed by a respirable dust committee with a similar governance structure and operation to the Standing Dust Committee currently in operation in NSW.

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018	Queensland Resources Council (QRC)	Retired workers	Suggests that retired workers should have access to industry funded full heath assessments but do not believe that there needs to be a separate industry wide fund for this to happen.	The Monash review recommended that participation in the health scheme be offered to retired workers. DNRM is currently considering options to ensure former and retired workers can access health assessments after their employment has ended. As an interim step, DNRM has progressed regulatory amendments that come into effect on 1 January 2017 that provide retiring coal workers with the opportunity to have a retirement examination within three months of their retirement..
018	Queensland Resources Council (QRC)	Dust compliance	Suggests that QRC have long maintained that there is a need to modernise the enforcement approach and to improve the capacity of the inspectorate to undertake their duties, including being aware of potential for, and perception of regulatory capture.	The Mines Inspectorate Compliance Policy explains how the Mines Inspectorate promotes and achieves compliance with the legislation. It identifies a range of compliance options the Mines Inspectorate can use to bring a mine back into compliance such as issuing a directive, directing the SSE and the company's senior management to attend a compliance meeting and prosecution. The Mines Inspectorate will determine the most appropriate course of action on a case by case basis and follow a number of steps as outlined in the policy. The Mines Inspectorate Compliance Policy Implementation guide also assists inspectors to adopt a consistent approach to implementing compliance action across inspectorates, regions and districts. It is anticipated that Mining Safety and Health will undertake a review of the Compliance Policy in 2017. To ensure inspectors develop their skills and understanding of the issues facing the industry, an ongoing program of continuous professional development is undertaken. During 2015-16, around 40 different training courses were delivered to inspectors. The Mines Inspectorate also provides training to inspectors to ensure awareness and mitigate the risk of regulatory capture. In addition to training for technical skills, inspectors are required to undertake code of conduct, ethical decision making and ethical conduct training. The courses dealing with ethical conduct and decision making are provided by the Queensland Ombudsman.
019	Caledon Coal	Regulatory framework	Caledon considers that, with the addition of regulatory amendments that will commence in January 2017, the legislative	The adequacy of the regulatory framework will continue to be assessed by the department in implementing the Monash review recommendations.

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			framework relating to respirable dust is generally adequate and appropriate.	
019	Caledon Coal	Failure of the health scheme	Caledon notes that the failure of the Health Scheme to detect CWP was contributed by a belief that the risk of CWP was being appropriately managed. This was not the case and supports implementation of the Monash recommendations.	The department will continue to consult with stakeholders in the implementation of the Monash review recommendations. Part of the implementation will be to establish an adequate surveillance program that will continue to routinely monitor the effectiveness of the health scheme.
019	Caledon Coal	Increase focus on occupational hazards to align with principle hazards	Caledon acknowledges that the regulatory framework has been heavily influenced by several catastrophic events. This history contributed to a strong emphasis on the management of hazards that have the potential to cause disastrous outcomes, such as gas explosions. A focus by coal industry participants on the prevention of these events may have contributed to diminished emphasis on latent occupational health hazards, such as CWP.	Queensland has a risk based-approach to mine site safety and health. Mine operators are required to proactively review their safety and health management system to ensure the system is effective and can constantly adapt to the changing environment and interdependencies of complex mining operations. Queensland's framework enables the site senior executive, site safety and health representatives, industry safety and health representatives, mines inspectors, authorised officers and mine workers to play a proactive role in reviewing, inspecting or auditing the safety and health management system.
019	Caledon Coal	Reporting disease	Caledon highlights an issue with requirements for SSEs to report prescribed diseases, as there is no requirement for NMAs to advise the SSE of a CWP diagnoses. Recommend that the SSE and company are advised of prescribed diseases.	DNRM has progressed a number of regulatory amendments relating to the CMWHS, including requirements for SSEs to notify DNRM when cases of prescribed diseases are identified. It should also be noted that the obligations on the SSE under section 198 of CMSHA to give notice of a disease only comes into effect if the SSE receives a report of a disease that is prescribed under the regulation. Section 52(2) of the Coal Mining Safety and Health Regulation 2001 also provides that a nominated medical advisor may disclose clinical findings obtained during the health assessment to the employer if the worker consents. The department is currently in the process on addressing changes to improve the health surveillance system. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors

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				are taken into account. This will include how and to whom information of diseases are reported to the department and stakeholders. Further changes to the regulatory framework may be required to streamline the reporting process for prescribed diseases.
019	Caledon Coal	Independence of Mines Inspectors	Caledon is not aware of issues with the independence of inspectorate and notes that the inspectorate has been active at the Cook mine. Cook mine has benefitted from the Mines Inspectorate's advice including information on pick configuration that expedited the development and implementation of standards to reduce coal dust generation from cutting equipment.	As noted in Caledon's submission, DNRM made 18 visits to Cook Mine from January to October 2016 including two unannounced inspections. Cook Mine also received several directives that prescribe actions to reduce risk to an acceptable level.
019	Caledon Coal	Monash Review & Senate Select Committee on Health	Supports the QRC's response to the findings of the Senate Select Committee on Health and the Monash review.	The department is committed to implementing all Monash review recommendations. The Senate Select Committee on Health made twenty recommendations a number of which, particularly those relating to NMAs, are effectively being addressed through implementation of the Monash review recommendations. Other recommendations are addressed by the government's action on dust management.
019	Caledon Coal	Principal Hazard Management Plan for respiratory health.	Caledon notes that there is no statutory requirement for a Principal Hazard Management Plan (PHMP) that specifically addresses hazards relating to respiratory health. Caledon has developed a PHMP for airborne dust, and noted that this was a voluntary step based on their internal risk assessment.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. A Principal Hazard Management Plan must identify, analyse and assess risk associated with principal hazards and include standard operating procedures and other measures to control risk. Defined under *Coal Mining Safety and Health Act 1999*, a principal hazard is a hazard at a coal mine with the potential to cause multiple fatalities. It can be argued that, by definition, this may include respiratory health, however there is some ambiguity as to whether it does. The Act was not intended to be prescriptive to capture a range of hazards. The original intent for principal hazard was to capture hazards that have an immediate consequence or imminent impact as opposed to one that has a latency.

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019	Caledon Coal	Dust monitoring	Caledon provided information on their approach to dust management. Which includes both personal dust monitoring and static and real time monitoring. Caledon supports use of real time monitoring for its immediate feedback capability	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
019	Caledon Coal	New technology to reduce dust exposure	Caledon recommends encouraging designers and manufacturers to develop and trial new engineering solutions to reduce dust exposure	SIMTARS is a resource available to the government, mining companies, mining equipment manufacturers, suppliers to the mining industry. SIMTARS supports the Inspectorate through provision of expert advice and assistance with accident investigations and also provides nationally recognised training and qualifications in mine safety to thousands of mine workers in Australia and overseas.
019	Caledon Coal	Education	Caledon delivered an education package to its workforce on CWP, training on this Trigger Action Response Plan, and established an Airborne Dust Committee from across the workforce.	The department encourages education on the risks and effects associated with coal mine dust lung disease.
019	Caledon Coal	Respiratory screening	Caledon has committed to ensuring all workers have current health assessments, and to an interim protocol for the conduct and review of chest X-rays for concerned mine workers. Noted that as of October, 5% of workers had taken up the voluntary option.	On 12 July 2016, all underground coal mines including Caledon give their support to offering their workers new checks on current chest X-rays or fresh X-rays if the X-ray was taken more than two years ago. All new x-rays taken under the Coal Mine Workers' Health Scheme will now be checked first by an Australian radiologist and, as an interim measure, by US-based B-readers. Proposed changes to the health scheme will incorporate retired or former workers as per the Monash review recommendation.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Clinical guidelines	Supports the development of clinical guidelines for health surveillance in coal mines. These guidelines would cover matters such as processes, systems and pathways, and referral and investigation processes. Examples are provided. Submission notes some existing examples of well-established clinical guidelines in other areas.	DNRM has produced a number of factsheets to assist medical professionals to provide them with guidance about the disease and to build their understanding of the ILO classification framework. Materials were distributed via professional medical peak bodies and key health industry stakeholders. Queensland Health facilitated the distribution of information about the disease to health professionals through its general practice distribution network. This proposal to develop detailed clinical guidelines is consistent with the Monash Review recommendations (Recommendations 2, 8.2.9). The department will be developing clinical guidelines for follow-up

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				investigation and referral to an appropriately trained respiratory or other relevant specialist of suspected coal mine dust lung disease in current or former coal mine workers.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Health surveillance	Recommend that any medical practitioner who performs health surveillance has the required training, skills, experience and competency. They suggest that training programs could be established for NMAs and that minimum standards and key competencies be established.	The department is developing an improved model for nominated medical advisers. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit. Regulatory changes that commence on 1 January 2017 will clarify that each examination carried out as part of a health assessment must be performed by a person qualified and competent to conduct the examination. This proposal is consistent with the Monash Review recommendations (Recommendations 8). These recommendations will be addressed as part of the key focus area on medical practitioners and assessments.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Spirometry	Suggests that for spirometry to be reliable a number of components are required around equipment, training, data storage, accreditation processes and quality control. Notes that spirometry is a uniformly accepted screening test however it has its limitations. Other medical tests, such as the diffusing capacity of the lungs for carbon monoxide (DLCO) may have a role to play, however further evaluation and research will be required before this would be more broadly adopted.	The Monash review identified significant issues with the spirometry screening component of the Coal Mine Workers' Health Scheme. It made several related recommendations including that spirometry should be conducted only by accredited practitioners who undertake initial and on-going training and quality of tests regularly audited. Following the Monash Review, changes were made to the health assessment form to clarify that spirometry must be undertaken by appropriately trained operators to the standard outlined in Queensland Health: Spirometry (Adult) Guideline, in order to improve the quality of spirometry. In addition, a change was made to require copies of spirometer reports to be provided to the department along with the health assessment form. The purpose of this change was to assist medical practitioners to identify a change in the individual's lung function over time. DNRM has consulted with the Thoracic Society of Australia and New Zealand to scope options for a practice-based, spirometry accreditation program for those NMAs in general medical practices and occupational health clinics.

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				The department is currently developing a proposal for an accreditation program for the taking and reading of spirometry under the scheme. Consultation on this proposal will include ascertaining stakeholder views on the merits of adopting gas transfer testing for screening.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Radiology	Supports screening chest X-rays to be classified using the ILO classification system, and the use of HRCT before a diagnosis is made. Notes that there are no international standards for using HRCT as a screening test and suggest Australia could be at the forefront of the development of protocols.	DNRM will be implementing the Monash review recommendation to develop clinical guidelines for follow-up investigation and referral of a suspected coal mine dust lung disease to an appropriately trained respiratory or other relevant specialist. All new X-rays taken under the Coal Mine Workers' Health Scheme (CMWHS) must be in a digital format – DNRM no longer accepts analogue X-ray films. NMAs must also clearly identify when they refer workers for an X-ray that it is for screening under the CMWHS and radiologists must report on a prescribed ILO reporting form. The department is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program. Radiologists would also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis. It is also envisaged that as part of the new program, if a potential case is identified, an appropriate diagnostic procedure is undertaken before a diagnosis is given to provide greater assurance.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Records management	Supports an electronic database for storing health surveillance records.	DNRM is investigating options to further improve reporting and implement enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Register for reporting CWP cases	Supports the establishment of a register for recording cases of CMDLD.	DNRM currently publishes up-to-date figures on confirmed cases of CWP on the DNRM website at www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/pneumoconiosis. Regulatory changes that commence on 1 January 2017 will require a mining company to report a range of coal mine dust lung diseases to

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				the department. In addition, enhanced health surveillance and electronic data management to be implemented under the Monash review recommendations will also ensure diagnosis of dust diseases are reported to the department through NMA health assessment reports. The data will be available and readily reportable through the department's annual Mines Safety and Health report and to the Commissioner for Mines Safety and Health. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account.
020	Australasian Faculty of Occupational and Environmental Medicine (AFOEM)	Medical review panels	Supports the establishment of an expert medical review panel for the purposes of determining a diagnosis if there is uncertainty or disagreement about the clinical diagnosis.	DNRM will be implementing the Monash review recommendation to develop clinical guidelines for follow-up investigation and referral of a suspected coal mine dust lung disease to an appropriately trained respiratory or other relevant specialist (Recommendation 2).
021	Black Lung Victims Group	Cases of CWP	Notes that there are at least 30 workers with black lung disease in Queensland and many more unconfirmed. Suggests many are frightened to come forward for risk of losing their job.	As at 24 November 2016, DNRM has confirmed 17 cases of CWP. The department confirms a case when the department's occupational physician confirms the diagnosis of a coal worker by their relevant medical practitioner. DNRM encourages any coal mine worker who has concerns about their health to talk to their general practitioner.
021	Black Lung Victims Group	Victims' fund	Suggest a victims' fund through an industry levy of 10c per tonne on all coal produced in Queensland	The Mines Inspectorate is currently funded by a levy on the mining industry paid to the department annually based on the number of workers in the industry and the budgeted cost of services.
021	Black Lung Victims Group	Dust levels	Recommend a reduction in legal dust level to 2.5mg per cubic metre.	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
021	Black Lung Victims Group	Dust reporting and monitoring	Suggests introduction of independent dust reporting and monitoring, including giving Check Inspectors the right to conduct spot checks on any mine, at any time, without	DNRM is working with industry to develop a recognised standard for dust monitoring in addition to a new dust reporting database. The dust monitoring standard will provide a standardised method for collecting respirable dust data. This will improve data quality and

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			notice; and recorded dust levels reported publically (identified, by mine) on a public website.	integrity and enable the Mines Inspectorate to oversee compliance with dust levels at the individual level, at the similar exposure group level, across an entire coal mining operation and across the coal mining industry. The department is proposing that for the recognised standard for dust monitoring that only independent, experienced, and Certified Occupational Hygienists should design, plan and report on the assessment of workplace dust exposures. The Mines Inspectorate, as part of its ongoing inspection and audit program, will provide regulatory oversight to ensure the activity meets these requirements and achieves an acceptable level of risk. Mines Inspectors currently hold wide ranging powers to conduct inspections. Recent regulatory amendments due to commence on 1 January 2017 will require coal mining companies to: • regularly report dust monitoring results to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months • advise inspectors every time dust concentrations exceed prescribed levels Results will be regularly reviewed by the Coal Mining Safety and Health Advisory Committee and can be reported publically through the Mines Safety & Health Annual Report. Data can be provided to the independent Commissioner for Mines Safety and Health who provides an annual report to the Minister and Parliament.
022	Peabody Energy	Dust management	Peabody Energy has listed the measures their mines have taken to mitigate dust and is happy to share these with other mines, including the information shared at the QRC dust workshop. They suggest that the department should set dust compliance objectives for coal mine operators but allow for flexibility of how these objectives are met.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent coal mine dust lung disease. Recognised standards provide an acceptable way of meeting safety and health obligations in relation to a particular risk when followed. Operators can manage the risk in a different way, but must be able to show that methods used are at least equivalent to the methods in the recognised standard and is within the regulated dust exposure limits.

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022	Peabody Energy	Privacy concerns	Peabody does not believe mine operators can adequately protect their employees without knowledge of their employee's health status.	The Monash Review made a number of findings and recommendations regarding the health assessment process and health surveillance. DNRM is currently considering opportunities to improve health screening and the collection, analysis and reporting of health data. DNRM will seek input of stakeholders including mine operators to inform any changes to requirements of the CMWHS.
022	Peabody Energy	Contractors and Labour Hire	Peabody has offered their employees, including above ground and former employees, free health assessments. Peabody recommends that contractor and labour hire companies be responsible for their employees, as it is out of the mine operator's control.	Under the Coal Mine Workers' Health Scheme, it is the responsibility of the contractor to ensure health assessments are conducted for their employees.. However it is the department's expectation that through the safety and health management system, SSEs would ensure appropriate checks of contractor's health assessments are made as part of the authority for the contractor to work onsite. The Monash review recommended that participation in the health scheme be offered to retired workers. DNRM is currently considering options to ensure former and retired workers can access health assessments after their employment has ended. As an interim step, DNRM has progressed regulatory amendments that come into effect on 1 January 2017 that provide retiring coal workers with the opportunity to have a retirement examination within three months of their retirement.
023	Australian Medical Association Queensland (AMAQ)	Coal Mine Workers' Health Scheme (CMWHS)	AMAQ believes that the CMWHS was for many years successful in monitoring coal workers' exposure to known causes of CWP, causing complacency amongst stakeholders including medical practitioners. AMAQ have highlighted a number of factors that they consider have contributed to limitations in the effectiveness of the CMWHS - such as an increase in coal worker numbers and pre-employment health assessments.	The Monash review concluded that there were major system failures at all levels of the design and operation of the respiratory component of the health scheme. The reviewers also noted that these and other deficiencies with this aspect of the scheme were confounded by the belief that CWP had been eliminated in Queensland, ultimately leading to a lack of rigor applied to detect such diseases.

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023	Australian Medical Association Queensland	NMAs	AMAQ identified a number of factors pertaining to nominated medical advisers (NMAs) that may have contributed to shortcomings within the Coal Mine Worker's Health Scheme. These include: • a significant increase in the number of NMAs since 2005, with many new NMAs not in coal mining areas and/or not formally trained in occupational medicine and detecting CWP • employers not properly completing Section 1 of the health assessment form, causing NMAs to not have a complete occupational picture • issues with timeliness of X-rays being provided to radiologists, such as use of hard copy film X-rays and backlogs of data entry into DNRM systems. AMAQ recommends that improvements to the health scheme should address the lack of training and lack of compliance with regulations by several NMAs, workers, employers, and large medical service providers. AMAQ supports the recommendations of the Monash Review for a smaller pool of approved doctors undertaking the respiratory component of health assessments, and a formal training program.	The Monash review identified a number of deficiencies in the Coal Mine Worker's Health Scheme (CMWHS) including issues with the number of NMAs and the inadequacy of suitable training, maintenance of skills and quality control. The Monash Review also found that Section 1 of the health assessment form was poorly completed and recommends that a separate respiratory health section be included in the health assessment form to ensure that respiratory health is properly considered during health assessments. It also recommends the inclusion of an occupational history component in the form. The department is developing an improved model for nominated medical advisers. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit. As a point of clarification, the AMAQ submission infers that the backlog of record entry by the department delayed provision of chest X-rays to radiologists. Under the CMWHS, NMAs provide the department's Health Surveillance Unit (HSU) with the health assessment forms, chest X-rays and associated reports at completion of the health assessment. The NMA engages with radiographers and radiologists directly to refer, take and read X-rays. That is, the HSU does not have a role in this process (noting that the HSU does facilitate transfer of chest X-rays to US readers as part of the recent interim two-reader process).
023	Australian Medical Association Queensland (AMAQ)	Radiology in Queensland	AMAQ supports Australian trained radiologists in their capability to appropriately read chest X-rays for CWP	In response to the findings of the Monash review regarding possible misreads of coal worker chest X-rays, DNRM, with support from underground coal companies in Queensland, implemented an interim two-reader process for coal worker CXRs. This includes

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			and rejects suggestions that they are less well trained than USA B-readers. AMAQ notes that: • ILO classification and the NIOSH B-reader program were designed for consistent reporting and epidemiological purposes and cannot diagnose CWP alone • ILO is based on film screen x-rays (FSR) and has a lower sensitivity compared to CT. Misdiagnosis of early CWP may occur due to the inherent limitations of chest radiographs, rather than any failing of Australian radiologists • NIOSH B-readers could not definitively diagnose any cases of CWP from the Monash sample. A centralised system is needed for possible positive cases to be discussed by a multidisciplinary panel of Australian based specialists • Australian radiologists are world class. • RANZCR has taken appropriate steps to have chest X-rays read by radiologists on their CWP register while further training pathways are finalised.	underground coal mines offering their workers new checks on current chest X-rays or new X-rays if the X-ray was taken more than two years ago. All chest X-rays are dual read, first by an Australian radiologist to the ILO Classification and then assessed by NIOSH approved readers at the UIC. This was done to restore the confidence of the coal industry workforce in the CWP screening program. Providing a second read of chest X-rays is consistent with practices under other screening programs such as BreastScreen Queensland and NIOSH. This is an interim measure until a Queensland based X-ray screening program is established that aligns with the Monash review recommendations. DNRM has consistently recommended to NMAs that all cases where the chest X-ray indicates possible CWP should be referred to a respiratory physician for an appropriate diagnostic assessment. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program. Radiologists would also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis.
023	Australian Medical Association Queensland	National standard	Recommends a single Australian standard for exposure limits and monitoring	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings. DNRM is working with industry and unions to develop a recognised standard for respirable dust monitoring in addition to a new dust

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				reporting database. The recognised standard for monitoring requires mines to conduct baseline monitoring and identify similar exposure group (SEGS) across the whole mine site (both surface and underground). The ongoing monitoring frequency will be risk based but it will include periodic sampling for all areas and locations. All mine sites, both surface and underground will be required by law as of 1 January 2017 to report respirable coal and silica dust monitoring data at least once every three months for development and longwall operations, and as required under the standard for other areas at a coal mine. Additionally, mine sites will be required to report single exceedances of the occupational exposure limit to a mines inspector and undergo a process of analysing and resampling the exceedance.
023	Australian Medical Association Queensland	Health surveillance/ Data management	Recommends improved resourcing for HSU, specifically IT systems supporting the health scheme, or outsourced data storage and reporting. An improved system solution must support a central location for chest X-rays.	The Monash review recommendations include that the department develop an electronic system of data entry and storage. Scoping of the requirements for such a system is currently underway, including aspects of its accessibility. This system will be flexible and scalable to adapt to future requirements.
023	Australian Medical Association Queensland	Health screening	Recommends a national screening approach to address needs of FIFO workforce. Spirometry and radiology should be supported by guidelines and undertaken with appropriately maintained equipment. Screening for CWP should reflect other screening programs such as BreastScreen Queensland or NIOSH, with a coordinating central hub that facilitates engagement between NMAs and ongoing research into occupational lung disease.	On 19 August, Minister Lynham addressed the COAG Energy Council, raising the issue of a surveillance scheme for former coal mine workers and the potential for coal workers to move interstate. At that meeting all Ministers emphasised their commitment to the health of coal mine workers, and agreed they would collaborate in order to raise awareness among former coal mine workers who might be at risk. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. DNRM has proposed that technical aspects of taking and reading X-rays will be in accordance with Australian requirements and the NIOSH Guideline – Application of Digital Radiography for the Detection and Classification of Pneumoconioses.

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				The proposed new Queensland X-ray screening program has been informed by analysis of programs in other jurisdictions. The proposed model is consistent with a number of features of the BreastScreen Queensland as well as NIOSH in the USA. The department is currently developing a proposal for an accreditation program for the taking and reading of spirometry under the health scheme.
023	Australian Medical Association Queensland	Consultation	Recommends increased collaboration between DNRM and Queensland Health, and also with relevant medical colleges and associations to provide professional input into the CMWHS. Highlighted the potential for the Queensland Health Promotion Commission to engage on coal workers' pneumoconiosis, once that Commission is established. AMAQ is willing to assist in development and implementation of a new CMWHS.	DNRM has been working closely with Queensland Health since cases of CWP were first confirmed in 2015. The Chief Health Officer has provided advice and facilitated review of public health records and distributed information about the disease to health professionals. Queensland Health experts continue to support DNRM in the implementation of the Monash review recommendations, for example with advice from the Chief Radiologist at BreastScreen Queensland and medical physicist advice from Biomedical Technology Services.
024	Breathe Safe Pty Ltd	Dust management	Recommends that CWP will be prevented through compliance with new regulatory standards and proper engagement of engineering control measures, administrative control measures and training for workers in order to evaluate their own safety.	DNRM is focussed on ensuring higher level controls are implemented to ensure respirable dust levels are below prescribed levels. Work is progressing with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease.
024	Breathe Safe Pty Ltd	Technology	Technology potential in the field of filtered, pressurised enclosed cabins to reduce risks of dust exposure to machine workers. It is noted that NSW and other jurisdictions have guidelines related to this.	DNRM already identifies the use of enclose cabins where possible, ensuring seals are well-maintained, providing inlet air filtration for respirable particles, and using positive pressure air inside cabs to prevent dust penetration as one of several potential engineering controls available to mine operators to assist in controlling worker exposure to dust.
024	Breathe Safe Pty Ltd	Dust exposure levels	Recommends a reduction in the maximum respirable coal dust level to a level comparable to NSW and the USA. They	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes

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			note that there may be no safe level of prolonged exposure to coal dust and further research is required.	to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
025	Anglo American	NMAs	Anglo American re-issued its NMA appointments in early 2016, and appointed a chief medical officer to liaise closely with NMAs and provide expert advice on occupational health processes.	These actions are consistent with Recommendation 7 of the Monash review which suggests that there needs to be a much smaller pool of approved doctors undertaking the respiratory component of health assessments. DNRM has accepted the recommendations of the Monash review and will consider implementation options that will inform a discussion paper on health assessments, including NMAs, which is expected in early 2017. Feedback will be sought from key stakeholders.
025	Anglo American	Dust management	Provided a detailed list on the actions their mines have taken to mitigate dust levels.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. Recognised standards provide an acceptable way of meeting safety and health obligations in relation to a particular risk when followed. Operators can manage the risk in a different way, but must be able to show that methods used are at least equivalent to the methods in the recognised standard and is within the legislated dust exposure limits.
025	Anglo American	Real time dust monitors	Have introduced Thermo PDM 3700 personal dust monitors into all its underground coal mines where its use is currently restricted to 'negligible explosion risk zones – where methane concentration less than 0.5%. Whilst attempts to have these devices approved for general use in Anglo American group underground coal mines (and hence in the Queensland underground coal industry) has been sought, it would appear the approvals process is painstakingly slow.	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.

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026	Maurice Blackburn Lawyers	Regulatory framework – aim of the Scheme	Notes that the prevention of CWP is not a stated aim, nor the intended effect, of the regulatory framework.	These concerns and proposals regarding the stated objectives of the regulatory framework are consistent with Recommendation 1 of the Monash review. The department supports the Monash review recommendation to clarify that the main purpose of the respiratory component of the scheme should explicitly focus on the early detection of CMDLD.
026	Maurice Blackburn Lawyers	Regulatory framework – self-regulation	Suggests the current framework that mandates self-regulation has failed in managing the safety risks to mine workers. They suggest stronger provisions within both the Act and Regulation, including serious sanctions for breaches.	Queensland has a risk based-approach to mine site safety and health. Mine operators are required to proactively review their safety and health management system to ensure the system is effective and can constantly adapt to the changing environment and interdependencies of complex mining operations. The Queensland framework enables the site senior executive, site safety and health representatives, industry safety and health representatives, mines inspectors, authorised officers and mine workers to play a proactive role in reviewing, inspecting or auditing the safety and health management system. The Mines Inspectorate has been active in regulating coal dust levels through the utilisation of a range of compliance tools and raising awareness. Since 2013 the Mines Inspectorate has issued 36 directives to nine underground coal mines. This included directing a mine to review its safety and health management system, review the effectiveness of dust controls, to reduce cutting speed and two to suspend operations. Mines placed under directive are required to undertake onerous monitoring regimes and stringent reporting processes until they can demonstrate that exposures have been controlled to acceptable levels. This requires a minimum of three consecutive months of demonstrated compliance. Notwithstanding this, the department acknowledges that more needs to be done and is implementing immediate regulatory amendments to strengthen respirable dust monitoring requirements. Regulatory amendments are due to commence in January 2017 which will introduce the new requirement for inspectors to be advised every time dust concentrations exceed prescribed levels. This new requirement also requires the site senior executive to ensure the cause of high average concentration is investigated and the results

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				of the investigation are recorded and analysed to identify trends and issues with the coalmine's safety and health management system. DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. Recognised standards provide an acceptable way of meeting safety and health obligations in relation to a particular risk when followed. Operators can manage the risk in a different way, but must be able to show that methods used are at least equivalent to the methods in the recognised standard and is within the legislated dust exposure limits.
026	Maurice Blackburn Lawyers	Dust levels	Suggests permissible dust exposure should be 1.0mg/m^3.	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
026	Maurice Blackburn Lawyers	Dust standard	Suggests a minimum standard created, which is constantly reviewed, that provides for operators to adopt best practice dust suppression techniques, technologies and PPE.	DNRM is working with industry to develop a recognised standard for dust control that will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. Recognised standards provide an acceptable way of meeting safety and health obligations in relation to a particular risk when followed. Operators can manage the risk in a different way, but must be able to show that methods used are at least equivalent to the methods in the recognised standard and is within the legislated dust exposure limits.
026	Maurice Blackburn Lawyers	Inspectors powers	Suggests broadening powers of mine inspectors under Part 9, Division 4 of the Act, to undertake inspections without limitations (e.g. time, notice).	Mine Inspectors currently hold wide ranging powers to conduct inspections. Current powers enable them to fulfil their obligations under the Act.
026	Maurice Blackburn Lawyers	Real time dust monitoring	Suggests mandatory and continuous wearing of real time dust monitors by coal mine workers.	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
026	Maurice Blackburn Lawyers	Reporting of dust levels	Suggests mandatory reporting of dust levels at regular intervals to the Mines Inspectorate or Minister, with such results	DNRM is working with industry and unions to develop a recognised standard for respirable dust monitoring in addition to a new dust reporting database. The recognised standard for monitoring requires

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			to be made immediately available to the public at all times.	mines to conduct baseline monitoring and identify similar exposure group (SEGS) across the whole mine site (both surface and underground). The ongoing monitoring frequency will be risk based but it will include periodic sampling for all areas and locations. All mine sites, both surface and underground will be required by law as of 1 January 2017 to report respirable coal and silica dust monitoring data at least once every three months for development and longwall operations, and as required under the standard for other areas at a coal mine. Additionally, mine sites will be required to report single exceedances of the occupational exposure limit to a mines inspector and undergo a process of analysing and resampling the exceedance. Results will be regularly reviewed by the Coal Mining Safety and Health Advisory Committee and can be reported publically through the Mines Safety & Health Annual Report. Data can be provided to the independent Commissioner for Mines Safety and Health who provides an annual report to the Minister and Parliament.
026	Maurice Blackburn Lawyers	Dust compliance	Suggests further independent oversight by the Minister or Mines Inspectorate to require shut down of mines or imposition of penalties where dust levels exceed standards. Suggests imposition of financial penalties where a worked develops CWP and exposure can be attributed to an employer (independent of any personal injury claim brought by a worker).	The primary purpose of the Mines Inspectorate is to ensure that persons with health and safety obligations manage and control risks effectively, thus preventing harm. Mines inspectors have a number of compliance and enforcement strategies available to them. In accordance with the Compliance Policy, five levels of administrative response for compliance and enforcement, which includes the power to issue a directive to suspend operations where a mine is exceeding dust levels. Under the current framework, a failure to comply with a directive under the Act is an offence, with a maximum penalty of 800 penalty units or two years imprisonment.
026	Maurice Blackburn Lawyers	Screening program	Support the introduction of mandatory HRCT scanning and the use of specialist respiratory physicians as early as possible.	DNRM is implementing the Monash review recommendation to develop clinical guidelines for follow-up investigation and referral of suspected coal mine dust lung disease to an appropriately trained respiratory or other relevant specialist. The department is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that as part of the new program, if a potential case is identified, an appropriate diagnostic procedure is undertaken before a diagnosis is given to provide greater assurance.

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				DNRM will consider feedback from stakeholders to ensure all factors are taken into account.
026	Maurice Blackburn Lawyers	Adoption of measures from other jurisdictions	Suggests measures used in other jurisdictions, such as New South Wales, should not be adopted without adequate evaluation of the operation of respective measures.	DNRM has been reviewing coal mine worker' schemes used in other jurisdictions, such as New South Wales and the United States, to identify measures that may be effective for the new scheme in the Queensland context. DNRM will continue to consult with stakeholders through a series of consultation papers on proposed models.
026	Maurice Blackburn Lawyers	Scope of current investigations	Supports action to examine the health and safety of all types of mine workers who are at risk of dust-related disease.	In addition to coal mine dust lung disease, the department is considering the recommendations of the Monash review in the context of workers in quarries, metalliferous and non-metalliferous mines regulated under the *Mining and Quarrying Safety and Health Act 1999.* This consideration is currently being made in consultation with the Mining Safety and Health Advisory Committee which is the equivalent of CMSHAC for metalliferous and non-metalliferous mining and quarrying (albeit with different members). In addition, regulatory changes that commence on 1 January 2017 will require a mining company to report a range of mine dust lung diseases to the department.
026	Maurice Blackburn Lawyers	Costs of health assessments	Suggests that all workers who have concerns about their health, should be able to have tests paid for by coal mine operators, as currently workers may be out of pocket if there is no subsequent diagnosis, and therefore, no coverage by the workers' compensation scheme.	Health assessments under the current scheme are mandatory for all coal mine workers (other than low risk workers). Under the Regulation, the costs of health assessments and medical examinations undertaken under the scheme are met by employers. Regulatory amendments that commence on 1 January 2017 will require mandatory respiratory function and chest X-rays examinations on entry to the industry and at least every five years for underground workers and ten years for aboveground workers. The Monash review recommended that participation in the health scheme be offered to retired workers. DNRM is currently considering options to ensure former and retired workers can access health assessments after their employment has ended. As an interim step, DNRM has progressed regulatory amendments that come into effect on 1 January 2017 that provide retiring coal workers with the

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				opportunity to have a retirement examination within three months of their retirement.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Training for radiologists	Recommends that State and Federal governments work with RANZCR to develop a certification system to the U.S. B-reader scheme (Recommendation 1).	DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program. Radiologists would also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	NMAs	Recommends NMAs should be a small group appointed by the government (Recommendation 2).	The Monash review recommends that a smaller pool of approved doctors, approved by DNRM, undertake health assessments under scheme. A consultation paper on issues related to medical practitioners and assessments is currently under development. It is intended that this paper will canvas a number of issues such as the role of doctors, training, minimum qualifications and experience, and on-going clinical audit.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Monash review	Recommends that the Monash review is found to be a partial response and that further measures are required around prevention and compensation and support (Recommendation 3).	In addition to implementing the recommendations of the Monash review, the department is putting in place a number of measures to strengthen respirable dust management requirements. This includes amendments to the regulatory framework, developing recognised standards on monitoring and controlling dust and developing a database to enable surveillance and reporting.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Aboveground coal mine workers	Recommends current and revised screening procedures should apply to surface and underground workers in the same way (Recommendation 4).	Regulatory amendments that commence on 1 January 2017 will require mandatory respiratory function and chest X-rays examinations on entry to the industry and at least every five years for underground workers and ten years for aboveground workers. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays for both underground and aboveground workers would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Retired workers	Recommends Australian states introduce a system for respiratory screening that includes workers that are no longer employed (Recommendation 5).	DNRM is currently considering options to ensure former and retired workers can access health assessments after their employment has ended. As an interim step, DNRM has progressed regulatory amendments that come into effect on 1 January 2017 that provide

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				retiring coal workers with the opportunity to have a retirement examination within three months of their retirement.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Rathus Report	Notes that the discovery of 75 cases in 1984 was an early warning in relation to that effectiveness of the regime - and that this was ignored (paragraph 3.10).	The Rathus-Abrahams report recommended a permanent health scheme for coal miners, and based on this recommendation, the Queensland Coal Board introduced the new Coal Industry Employees Health Scheme in May 1993, which formed the basis of the current Health Scheme.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Health surveillance	States that the DNRM Health Surveillance was responsible for reviewing chest X-rays on the basis that this was a requirement of the assessment form. Notes that the requirement was subsequently removed from the form somewhere between 1998 and 2001.	The health assessment forms used between 1993 and 2001 included a section where the ILO Classification could have been recorded. The removal of this section from the form appears to have occurred when the Queensland Coal Board scheme transitioned to the existing scheme in place under the current legislative framework in 2001, following a revision of the form by a tripartite working group. Since 27 July 2016 the form requires that all chest X-ray reports must be completed using the prescribed ILO reporting template.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	CXR Screening	States that the CFMEU in Queensland has resorted to sending chest X-rays of suspected cases to the United States for reading, which has resulted in new diagnoses (paragraph 4.11).	On 27 July 2016, an interim dual-screening process was introduced by DNRM. All chest X-rays taken under the Coal Mine Workers' Health Scheme (CMWHS) are first read by an Australian radiologist to the ILO Classification and then assessed by NIOSH approved readers at the UIC. The screening of X-rays by US based B-readers is only an interim process until a new Queensland based program is established. DNRM is currently consulting with stakeholders on a new Queensland X-ray screening program. It is envisaged that X-rays would be dual read to the ILO Classification by radiologists who have successfully completed an ILO training program. Radiologists would also be required to undergo refresher training and have their performance monitored and audited on an ongoing basis.
027	Construction, Forestry, Mining	Support for workers diagnosed with CWP	Recommends that Queensland government establish a Coal Dust Disease board to provide lifelong assistance for	DNRM currently refers current and former coal mine workers with any health concerns to their general practitioner for on-going advice and assistance. All workers diagnosed with CWP can make a claim

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	and Energy Union (CFMEU)		workers diagnosed with CWP and other lung diseases (Recommendation 7).	for compensation under Queensland's workers' compensation scheme or their employer's own insurance scheme, or they can make a common law claim for damages through the law courts.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Dust compliance	Recommends Queensland Mines Inspectorate develop and implement a clear compliance and enforcement program, with clear consequences for breaches (Recommendation 8).	The Mines Inspectorate Compliance Policy explains how the Inspectorate promotes and achieves compliance with the legislation. It identifies a range of compliance options the Inspectorate can use to bring the mine back into compliance such as issuing a directive, directing the SSE and the company's senior management to attend a compliance meeting and prosecution. The Inspectorate will determine the most appropriate course of action on a case by case basis and follow a number of steps as outlined in the policy. The Mines Inspectorate Compliance Policy Implementation guide also assists Inspectors to adopt a consistent approach to implementing compliance action across Inspectorates, regions and districts.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Dust reporting	Recommends full disclosure of names of mines inspected, their dust levels and any recommendations made or compliance action undertaken (Recommendation 9).	Recent regulatory amendments due to commence on 1 January 2017 will require coal mining companies to: • regularly report dust monitoring results to the Mines Inspectorate – for underground longwall and development operations, at least every three months • advise inspectors every time dust concentrations exceed prescribed levels Results will be regularly reviewed by the Coal Mining Safety and Health Advisory Committee and can be reported publically through the Mines Safety & Health Annual Report. Data can be provided to the independent Commissioner for Mines Safety and Health who provides an annual report to the Minister and Parliament.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Standing dust committee	Recommends Mines Inspectorate establish a standing dust committee similar to that which operates in NSW (Recommendation 10).	Data reported from respirable dust monitoring at all mines sites on a quarterly basis will be reviewed by a respirable dust committee with a similar governance structure and operation to the Standing Dust Committee currently in operation in NSW.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Dust sampling	Recommends coal mine safety regulators take responsibility for dust sampling or supervise dust sampling (Recommendation 11).	DNRM is working with industry to develop a recognised standard for dust monitoring in addition to a new dust reporting database. The dust monitoring standard will provide a standardised method for collecting respirable dust data. This will improve data quality and integrity and enable the Mines Inspectorate to oversee compliance

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				with dust levels at the individual level, at the similar exposure group level, across an entire coal mining operation and across the coal mining industry – and take corrective action where needed. The department is proposing that for the recognised standard for dust monitoring that only independent, experienced, and Certified Occupational Hygienists should design, plan and report on the assessment of workplace dust exposures. The Mines Inspectorate, as part of its ongoing inspection and audit program, will provide regulatory oversight to ensure the activity meets these requirements and achieves an acceptable level of risk.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Dust standards	Recommends existing State coal dust standards be reviewed, including a reduction in the current limit (Recommendation 12).	DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Dust sampling technology	Recommends coal dust sampling requirements be reviewed with a goal of adopting best practice technology including real time monitoring for all coal mine workers (Recommendation 13)	DRNM is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at QLD mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
027	Construction, Forestry, Mining and Energy Union (CFMEU)	Directive issued by ISHRs	Suggests that as the CWP diagnosis crisis emerged, the role of the Queensland Inspectorate appeared to be to subvert action to prevent the mine site dust problem continuing. In support of this view, notes an email from the Chief Inspector to SSEs in relation to the validity of a directive issued by ISHRs. They state that the email advised the industry to ignore the direction from the ISHRs (paragraphs 8.2.8 to 8.2.10).	The department rejects the assertion that it has subverted action to address dust exposure in coal mines. The Mines Inspectorate has been active in regulating coal dust levels through the utilisation of a range of compliance tools and raising awareness. Since 2013 the Mines Inspectorate has issued 36 directives to nine underground coal mines. This included directing a mine to review its safety and health management system, review the effectiveness of dust controls, to reduce cutting speed and two to suspend operations. DNRM acknowledges the important role of industry safety and health representatives in mine safety and health and recognises that the powers they have under the Act are a tool for ensuring safety and health standards are upheld in mining operations. Those representatives are at liberty to exercise their powers within the limits of the Act.

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028	BHP Billiton	Dust exposure limits	Recommends a review of the current regulatory occupational exposure limit for coal dust in light of the latest science.	DNRM notes that BHP Billiton has voluntarily applied an occupational exposure level for respirable coal mine dust of 2.0 mg/m^3. Lowering the "safe allowable dust level" at Queensland mines – which operate at "the national standard"– is being considered by Safe Work Australia. DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
028	BHP Billiton	Dust monitoring	Recommend an expedited government accreditation for real-time dust monitoring devices for use in Queensland mines. Dust monitoring results to be entered into a centralised dust exposure records database.	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia. DNRM supports the development of a centralised point for dust exposure records. Recent regulatory amendments will strengthen respirable dust management requirements by requiring all coal mines to: • regularly report dust monitoring results to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months • advise inspectors every time dust concentrations exceed prescribed levels. In preparation for commencement of the regulatory amendments, the department is developing a respirable dust database to enable surveillance and reporting. The database will enable the inspectorate to view compliance and industry trends as well as generate reports. The Coal Mine Safety and Health Advisory committee (CMSHAC) will facilitate the review of the analysed reports generated from the quarterly records.
028	BHP Billiton	Health screening	Development of guidance on health screening and management of CWP, including a review of existing health surveillance frequencies and processes.	DNRM has previously provided guidance material to NMAs, mine companies and workers regarding CWP. Recent regulatory amendments that come into effect on 1 January 2017 will clarify health assessment requirements. Respiratory function and chest x-ray examinations must occur at least once every 10 years for

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				aboveground coal mine workers and at least once every 5 years for underground coal mine workers. The Monash review made a number of findings and recommendations regarding the health assessment process and health surveillance. DNRM is currently considering opportunities to improve health screening and the collection, analysis and reporting of health data. DNRM will seek input of stakeholders including mine operators to inform any changes to requirements of the CMWHS.
028	BHP Billiton	Notification of a confirmed case	There is no requirement for employers to be notified of a diagnosis of CWP but the changes to the Regulation commencing on 1 January 2017 will make the employer and operator responsible for notifying DNRM.	DNRM has progressed a number of regulatory amendments relating to the Coal Mine Workers' Health Scheme, including requirements for SSEs to notify DNRM when cases of prescribed diseases are identified. It should also be noted that the obligations on the SSE under section 198 of *Coal Mining Safety and Health Act 1999* to give notice of a disease only comes into effect if the SSE receives a report of a disease that is prescribed under the regulation. Section 52(2) of the Coal Mining Safety and Health Regulation 2001 also provides that a nominated medical advisor may disclose clinical findings obtained during the health assessment to the employer if the worker consents. The department is currently in the process on addressing changes to improve the health surveillance system. A consultation paper on health surveillance is currently being prepared by the department to canvass a proposed model with stakeholders to ensure all factors are taken into account. This will include how and to whom information of diseases are reported to the department and stakeholders. Further changes to the regulatory framework may be required to streamline the reporting process for prescribed diseases.
029	Ian Nicholas	Mine Safety	Mr Nicholas identifies a number of incidents he believes indicate shortcomings in the safety of mine operations.	The *Coal Mining Safety and Health Act 1999* is based on a risk management approach that requires the anticipation and control of problems before they arise. This is evidenced by: • the requirement for all mines to have a safety and health management system that provides for an acceptable level of risk • proactive inspector's powers and interventionist powers where risk is not appropriately managed

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				• safety-oriented management structure • a duty by all persons to ensure an acceptable level of risk. The primary purpose of the Mines Inspectorate is to ensure that persons with health and safety obligations manage and control risks effectively, thus preventing harm. Mines inspectors have a number of compliance and enforcement strategies available to them. In accordance with the Compliance Policy, five levels of administrative response for compliance and enforcement, which includes the power to issue a directive to suspend operations where a mine is exceeding dust levels. Under the current framework, a failure to comply with a directive under the Act is an offence, with a maximum penalty of 800 penalty units or two years imprisonment. In addition, mine workers, or their representatives, may make confidential complaints about safety and health matters to the Mines Inspectorate. These complaints must be investigated and the name of the person making the complaint must not be revealed. This investigation may involve a visit to the particular mine where the allegation took place. When the investigation is complete, the person making the complaint will be advised of the results of the investigation. The Act also provides protection for persons who report or make complaints about safety matters.
029	Ian Nicholas	Dust monitoring	Mine operators should not be able to monitor their own dust levels. Monitoring should be completed by the department.	Mine sites engage suitably qualified independent companies to conduct personal monitoring and report these results back to the mine. These reports are supported by field observations and recommendations control exposure. It is the mines' responsibility to review these results, consider recommendations and control exposures. The department is not aware of any evidence to suggest that the monitoring is biased or influenced by the mining companies. The results provided by monitoring companies have clearly identified exceedances. The department has acted on these exceedances during recent data reviews. In addition, recent regulatory amendments due to commence on 1 January 2017 will require coal mining companies to:

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				• regularly report dust monitoring results to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months • advise inspectors every time dust concentrations exceed prescribed levels Results will be regularly reviewed by the Coal Mining Safety and Health Advisory Committee and can be reported publically through the Mines Safety & Health Annual Report. Data can be provided to the independent Commissioner for Mines Safety and Health who provides an annual report to the Minister and Parliament The Mines Inspectorate has also been working with employee and employer representatives to develop recognised standards for monitoring respirable dust and for respirable dust control. While recognised standards are not mandatory they provide an acceptable way of meeting safety and health obligations in relation to a particular risk when followed. Inspectors and inspection officers have the power to enter and inspect or audit mines under the *Coal Mining Safety and Health Act 1999*, and do so with and without notice to mine operators. An inspection may be undertaken with or without prior notice depending on the purpose of the visit and the issue at hand.
029	Ian Nicholas	Exposure risk	Mr Nicholas indicates that coal loaders and field service workers are potentially at risk of dust exposure.	Following a self-assessed survey conducted by DNRM on mine's dust management, the department identified that a comprehensive monitoring strategy should involve the concept of similar exposure groups (SEGs). SEGs are defined as a group of workers who have the same general exposure to risk. Such as the similarity and frequency of the tasks they perform, the materials and processes with which they work, and the similarity of the way they perform those tasks. Since November 2010, employers have been required to specify a worker's SEG in the health assessment form. The purpose of this was to inform decisions about whether a miner is in a dust-exposed job. The recent Monash Review has identified that this requirement was poorly completed, or in some case, not completed at all. The Monash Review recommended that the criteria to determine workers at risk from dust exposure should be based on past and current in

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				underground coal mines and designated work categories in open-cut coal mines and coal handling and preparation plant. This recommendation includes the proposal that a criteria to determine job categories at risk from dust exposure should be standardised across Queensland and reviewed regularly to reflect changes in level of risk. The department supports all of the Monash Review recommendations and is taking necessary action to address these. DNRM already identifies the use of enclose cabins where possible, ensuring seals are well-maintained, providing inlet air filtration for respirable particles, and using positive pressure air inside cabs to prevent dust penetration as one of several potential engineering controls available to mine operators to assist in controlling worker exposure to dust.
030	Ian Matthews	Risk of dust exposure is wider than underground coal workers Self -regulation	Submission highlights that Dr Matthews is a GP who has long been concerned that the health impacts of coal dust extend well beyond those working underground. Comments on concerns about self-regulation not working, based on what Dr Matthews has been told by workers. Submission doesn't confirm whether Dr Matthews is a NMA or have any experience working in or around the mining industry.	The Department recognises that a comprehensive dust monitoring strategy should involve the concept of similar exposure groups (SEGs) – identifying and grouping workers in the health assessment form based on their level of exposure to dust. The recent Monash review has identified that this requirement was poorly completed, or in some case, not completed at all. The Monash review recommended a number of improvements to this process, of which the department supports and is taking action to address this. With regards to concerns about self-regulation, the Department's Mines Inspectorate provides an active role to ensure compliance. Notwithstanding this, the department acknowledges that more can be done and is implementing immediate regulatory amendments to strengthen respirable dust monitoring requirements. This includes the new requirement for inspectors to be advised every time dust concentrations exceed prescribed levels.
031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	DNRM's failure to enforce directives in relation to dust	According to the Senate Select Committee on Health, between 2012 and 2015 DNRM issued 23 directives in relation to coal dust monitoring and mitigation. Only nine were complied with by their due date and some took up to 12 months to reach compliance.	Since 2013 the Mines Inspectorate has issued 36 directives to nine underground coal mines in relation to dust. When the Mines Inspectorate issues a directive a mine will be required to address all matters outlined in the directive by a certain date. If a mine does not achieve compliance by the due date the Mines Inspectorate will escalate the compliance action, which could result in a directive to

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			Concerned mines did not respond to directives in a timely manner and there have not been any prosecutions for failing to comply. Agrees with the Committee that interim measures such as formal warning, followed by the naming the mines in a public register would be an appropriate method of ensuring compliance. In the long term the legislation should be amended to allow DNRM greater prosecutorial powers such as the ability to impose fines or seek a court order shutting down a mine for failing to comply with a directive.	the mine to reduce shearer speed or stop production until appropriate actions are implemented. There may be occasions when the Mines Inspectorate will extend the directive or keep the directive open. The Mines Inspectorate may choose to extend the directive because the mine is not at full production and therefore cannot provide results to the Inspectorate showing dust levels at full production. For example, the Mines Inspectorate has kept a directive open even though the results of monitoring showed the dust levels at the mine was below 3mg/m^3. This is because the mine has not been in full production during this period. There may be occasions where mines achieve compliance by the due date but the Inspectorate will keep the directive open to continue monitoring the mine's dust levels to ensure sustained compliance. The Mines Inspectorate will not close a directive based on one set of compliant data. In fact, the Mines Inspectorate generally requires sustained compliance dust data for three months before the directive is closed. In one case, a mine under a directive has provided data for two months demonstrating compliance but have not for the third month because there has been no production activity. In this case the directive remains open. Directives and compliance meetings are demonstrated effective ways to achieve an immediate response from mines and to enforce compliance. While the Mines Inspectorate can also prosecute mines for breaching a safety and health obligations, such as failing to ensure the occupational exposure limit is not exceeded, this option is not considered to be the most effective compliance tool in the case of managing dust. Prosecution is a lengthy process that will does not address the immediate issue problem and will divert the Mines Inspectorate and the mines' resources from addressing the issue at hand. Issuing directives and taking mines through a compliance process requires immediate response from the mine aimed at correcting the deficiency and changing behaviour. It requires the mine to focus its attention and resources on minimising risk to workers.

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				Issuing directives can be an effective means of deterring substandard safety practice as their implementation can have a significant financial impact on the mine. For example, a directive may call for engineering modifications requiring significant expenditure. The impacts on cash flow and lost revenue where operations are slowed or suspended can also be significant. By contrast, if a mine were to be prosecuted for breaching a safety and health obligation, the maximum penalty is currently $91,425. Given the delays and uncertainty inherent to prosecutions, such an outcome is considered to be far less effective than the inspectorate's current approach to compliance.
031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Increase in work performed in returns	Concerned with increase in work performed in 'returns', traditionally the area of a mine with the greatest level of dust. Suggests the following requirements for mines permitting workers to operate in returns: • mandatory personal protective equipment and training in the proper fitting and use of the equipment, • constant monitoring and reporting • third party audit of dust mitigation systems	<u>Personal protective equipment</u> Effective dust control procedures can vary from mine to mine and it is the responsibility of the mine's SSE to determine the most effective method for dust control at that mine following risk assessment and ongoing monitoring. The accepted industry standard for achieving an acceptable level of risk is by working through the hierarchy of control. It stipulates that best and most effective protection from harm is through elimination – that is by preventing the hazard from occurring in the first place. If elimination is not reasonably practicable, risk must be minimised by working through the alternatives in the hierarchy, from the highest to the lowest - substitution, isolation/separation, engineering controls, administration and personal protective equipment. While personal protective equipment is an important part of reducing exposure to dust, the mine's focus should be to ensure high level controls are implemented to ensure respirable dust levels are below prescribed levels. Mine operators determine personal protective equipment requirements on a site-by-site basis based on risk assessment under the coal mine's safety and health management system. Respiratory protective equipment is an example of personal protective equipment that mines may use to protect the health of their workers. If respirators are used, it is essential that: • the type of respirator selected is able to filter the size of dust particle and concentration of dust

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				• the facial seal of the respirator prevents dust from entering the breathing zone of the person • respirators are regularly inspected and maintained • the wearing of respirators is enforced by supervision. The Mines Inspectorate works with industry and union representatives to ensure mines achieve an acceptable level of risk. <u>Monitoring and reporting</u> Amendments to the Regulation commencing on 1 January 2017 will require mines to submit to the chief inspector will strengthen respirable dust management requirements by requiring all coal mines to: • regularly report dust monitoring records to the Mines Inspectorate – for underground longwall and development operations, at least every three months • advise inspectors every time dust concentrations exceed prescribed levels. The amendments also outline the procedure to follow if dust concentration exceeds prescribed levels. Further requirements for dust monitoring will be detailed in the recognised standard for dust monitoring, which the Mines Inspectorate is finalising.
031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Real time monitoring	Real time monitors will help deputies and other supervisors to justify their decisions to stop their shifts due to dust levels. Suggests installing instantaneous dust monitors, locations and specifications of monitors to be prescribed in regulation.	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Obligation on operator to ensure safety	Obligations should be placed on mine operator to ensure safety of contractors.	Under the CMSHA coal mine operators have an obligation to ensure the risk to coal mine workers while at the operator's mine is at an acceptable level. A coal mine worker includes a contractor.

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031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Amending regulatory framework	The Mines Inspectorate is responsible for managing compliance with the Coal Mining Safety and Health Act and Regulation. The re-emergence of CWP indicates the current legislative and enforcement regime is inadequate in providing protection to mine workers. Suggests immediate reform to Queensland mine safety legislation to: • better address dust levels in mines and • to specify dust monitoring and reporting requirements and frequency • provide DNRM with greater prosecutorial powers such as to impose fines or seek court order to shut down a mine for failing to comply with a directive.	The Mines Inspectorate has worked with the industry and worker representatives through the CMSHAC to develop amendments to the Regulation. The changes, commencing on 1 January 2017, will strengthen respirable dust management requirements by requiring all coal mines to: • regularly report dust monitoring records to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months • advise inspectors every time dust concentrations exceed prescribed levels. The amendments also outline the procedure to follow if dust concentration exceeds prescribed levels. DNRM is fully committed to dust management and reducing worker exposure to dust. For example, the development of recognised standards for dust control and monitoring will set the benchmark for the way industry will meet its safety and health obligations to prevent dust lung disease. The Mines Inspectorate Compliance Policy explains how the Mines Inspectorate promotes and achieves compliance with the legislation. It identifies a range of compliance options the Mines Inspectorate can use to bring a mine back into compliance such as issuing a directive, directing the SSE and the company's senior management to attend a compliance meeting and prosecution.
031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Independent body for dust	The mines are responsible for monitoring dust levels, investigating exceedances and implementing controls to mitigate those exceedances. There is no obligation on the mine to report unacceptable levels of dust to DNRM. Suggests Queensland Government establish an independent body similar to Coal Services in NSW to monitor and enforce compliance with dust levels.	Recent regulatory amendments due to commence on 1 January 2017 will require coal mining companies to: • regularly report dust monitoring results to the Mines Inspectorate – for underground longwall and development operations, at least every three months • advise inspectors every time dust concentrations exceed prescribed levels Results will be regularly reviewed by the Coal Mining Safety and Health Advisory Committee and can be reported publically through the Mines Safety & Health Annual Report. Data can be provided to

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				the independent Commissioner for Mines Safety and Health who provides an annual report to the Minister and Parliament. Mine sites engage suitably qualified independent companies to conduct personal monitoring and report these results back to the mine. These reports are supported by field observations and recommendations to control exposure. It is the mines' responsibility to review these results, consider recommendations and control exposures. The department is not aware of any evidence to suggest that the monitoring is biased or influenced by the mining companies. The results provided by monitoring companies have clearly identified exceedances. The department has acted on these exceedances during recent data reviews.
031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Reporting of exceedances	Suggests workers should be informed when dust sample exceeds regulatory limit, require a review of the incident and a report be provided to DNRM, affected workers and the independent coal services body. Suggests all instances of excessive dust levels noted in statutory reports should be reported to ISHRs, collated and reported to DNRM quarterly.	The Regulation currently requires that a mine's safety and health management system must provide for the monitoring and recording of dust concentration levels. The results must be kept in a location that is easily accessible by each worker at the mine and the records must be kept for 30 years. Inspectors visiting a site often find the results posted on the mine's notice board and accessible by workers. Queensland has a risk based approach to determine sampling frequency but amendments to the regulation commencing on 1 January 2017 will require the reporting for two high risk similar exposure groups in the longwall and development production areas at least once every three months. The frequency for other areas will be stated in the recognised standard for dust monitoring. In preparation for commencement of the regulatory amendments, DNRM is developing a respirable dust database to enable surveillance and reporting. All coal mines (open cut and underground) will be required to report its quarterly dust data to the Mines Inspectorate. DNRM will provide guidance material on how to submit personal respirable dust to the Mines Inspectorate. The database will enable the Mines Inspectorate to view compliance and industry trends as well as generate reports. CMSHAC will facilitate the review of the analysed reports generated from the quarterly records.

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031	Association of Professionals, Engineers, Scientists and Managers Australia (APESA)	Confidential reporting	There are no provision for anonymous reporting of safety issues. Staff who makes complaints or stop production due to safety or dust related incident should be protected. Protection for employees should apply to contractors. Suggests a confidential hotline for reporting of dust be established	The CMSHA allows mine workers or their representatives to make confidential complaints about safety and health matters to the Mines Inspectorate. These complaints must be investigated and the name of the person making the complaint must not be revealed. The complaint will be logged on the Mines Inspectorate complaints database and will be investigated by an officer of the Mines Inspectorate. This investigation may involve a visit to the particular mine where the allegation took place. When the investigation is complete, the person making the complaint will be advised of the results of the investigation. The CMSHA also provides protection for persons who report or make complaints about safety matters.
032	Glencore	QRC's submission	Glencore acknowledges points raised in QRC's submission and notes its support to these same points.	Response to matters are provided in the response to QRC's submission.
032	Glencore	Regulatory framework	Glencore notes that for a high hazard industry to operate with an acceptable level of risk, both good regulation and good governance is required. Glencore summarises the recent changes that have occurred to the framework and regards these changes as improvements to prevent CWP.	The adequacy of the regulatory framework will continue to be assessed by the department in implementing the Monash review recommendations.
032	Glencore	Confirmed cases of CWP at Glencore	Cases confirmed at Glencore consist of individuals whom has distinct differences in their work history and the time they have worked in the coal mining industry. All cases had X-rays on commencement of employment with Glencore and regularly thereafter. CWP was not identified until recently. Glencore highlight that, as documented in the Commissioner's report for 2015-16, the respirable dust levels of their operations	No specific trends have yet to be identified in the cases of CWP confirmed by the department. Amendments to the regulation commencing on 1 January 2017 require the reporting for two high risk similar exposure groups in the longwall and development production areas at least once every three months will enable the Mines Inspectorate to continue to review coal dust levels in Queensland mines.

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			have remained below OEL (with the exception of 2014 at its Newlands and Oaky mines). Glencore explain that the 2014 Newlands experienced a period of extremely difficult strata related mining conditions where manual operation of the longwall face was required. Oaky experienced one abnormal high result that when taken into the longwall SEG inflated the mean result to above OEL. Glencore explain that the individual involved was wearing RPE and that chest X-ray readings were conducted.	
032	Glencore	Actions taken since CWP	Glencore have taken steps to addressing employees and contractors concerns. This includes: • conducting communication forums and presentations on airborne dust • communication about respirable dust monitoring results • all underground employees have been provided the opportunity of new X-ray or re-reading – taken in accordance with ILO • a range of underground engineering initiatives have been implemented, of which is listed in the submission. Glencore met with all of their major underground contractors (during Dec 15 to Jan 16) to discuss issues with CWP. Each of the companies have offered employees X-ray, of which all have undertaken this task	DNRM continues work with all stakeholders to implement Monash review recommendations and dust control and monitoring measures.

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			and are continuing to schedule X-rays for employees.	
032	Glencore	Respiratory Protection Equipment (RPE)	Glencore note that, in accordance with Regulation, if the respirable dust cannot be reduced to prescribed levels that PPE is used and the submission lists the type of PPE Glencore uses.	If respirable dust masks are used, it is essential that adequate seal enforcement is achieved. This requires a worker to be clean shaven. DNRM provides a consistent message that respiratory protective equipment should only be used when it is a part of a respiratory protection program that has been established in accordance with AS1715. This requirement has been reinforced in the recognised standard for dust control due for release in early 2017.
032	Glencore	Coal Mine Workers Health Scheme	Glencore regard that legislative compliance with respect to mine workers undertaking a health assessment before a person starts work is well established. Glencore state that they are in compliance with this requirement. Glencore note that, up until this point, open cut operations have not mandated the requirement for an X-ray.	Health assessments under the current scheme are mandatory for all coal mine workers (other than for workers carrying out low risk tasks – low risk tasks are shown by a risk assessment to create a risk that is so minimal it can managed effectively without requiring the worker to undergo a health assessment). Regulatory amendments that commence on 1 January 2017 will require mandatory respiratory function and chest X-rays examinations on entry to the industry and at least every five years for underground workers and ten years for aboveground workers.
032	Glencore	Health & hygiene Monitoring	Glencore have maintain monitoring regimes for personal dust exposure. Sampling and testing procedures have been contracted by external agencies with the relevant skills and qualifications to ensure NTA guidelines are adhered to.	DNRM is working with industry and unions to develop a recognised standard for respirable dust monitoring in addition to a new dust reporting database. The recognised standard for monitoring requires mines to conduct baseline monitoring and identify similar exposure group (SEGS) across the whole mine site (both surface and underground). The ongoing monitoring frequency will be risk based but it will include periodic sampling for all areas and locations.
032	Glencore	Dust committee	Recommends introduction of standing dust committee to provide a further level of governance.	As of 1 January 2017 all mines will be required to provide their exposure data to the department at prescribed intervals. The department will review and report this data. In addition a tripartite standing dust committee will meet quarterly to review the data and make recommendations to CMSHAC (as required).
032	Glencore	Dust levels	Recommend review of National Standard for dust exposure levels	The department is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any

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				changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
032	Glencore	Dust monitoring	Recommends introduction of real time dust monitoring.	DNRM through SIMTARS is working with industry and a number of manufacturers of real time dust monitoring devices to understand their application at Queensland mine sites. While some devices are capable of measuring personal exposure to respirable dust, there is no device currently certified for safe use in Australia.
033	Coal Services	Regulatory model in NSW	Notes the 'collaborative model' used in NSW, the key stakeholders and the deliverables. Also notes CS Health and the complimentary preventative services provided by Coal Services, which include approval of training schemes, fit testing of PPE, and the generic underground induction course. Notes coal services also administers the Coal Mines Insurance scheme.	The Resources Regulator, created by the NSW Department of Industry, is responsible for compliance and enforcement functions across NSW's mining and energy sectors. This includes regulating safety and health performance in NSW mines. Coal Services is jointly owned by the CFMEU and NSW Minerals Council and carries out a number of statutory functions across workers compensation, health and hygiene, emergency response, training and industry statistics. The Queensland Government oversees the coal mining safety and health framework in this state, advised by a tripartite committee of union, industry and government representatives. In Queensland, coal mining-related health services and dust monitoring are provided through the private sector. Some of the services provided by Coal Services are also provided in Queensland by the Safety in Mines Testing and Research Station (SIMTARS) in DNRM. It is a resource available to government, mining companies, mining equipment manufacturers and suppliers to the mining industry. SIMTARS is a major provider of occupational hygiene sampling and monitoring, including respirable dust in coal mines. It is also an accredited Registered Training Organisation and provides nationally recognised training and qualifications in mine safety to thousands of mine workers in Australia and overseas. In performing this service, SIMTARS operates as a commercial entity contracting with mine operating companies and at arms-length from the Mines Inspectorate. In NSW, it is mandatory for NSW coal mines to contribute to the Coal Mines Insurance Workers Compensation Scheme. Coal Mines Insurance is a specialised insurer and is required to provide a health and safety component to holders. A percentage of the premiums

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				received is used to fund, in part, health and safety initiatives, including the periodic health surveillance medicals and pre-employment medicals. Fees are also generated from the provision of other health services by Coal Services to industry. Any shortfall in the costs of providing these health services is covered by the investment income generated by Coal Services. In contrast, three of Queensland's largest coal miners, BHP Billiton Limited, Glencore Queensland and South32 Cannington Pty Ltd, are self-insured while the remainder pay into WorkCover Queensland.
033	Coal Services	Dust monitoring	Notes Coal Services inspectors conduct accompanied monitoring and work collaboratively to design, implement and monitor action.	Mine sites engage suitably qualified companies, including SIMTARS, to conduct personal monitoring and report these results back to the mine. These reports are supported by field observations and recommendations control exposure. It is the mines' responsibility to review these results, consider recommendations and control exposures.
033	Coal Services	Dust levels	Notes the current airborne dust exposure limits for respirable coal dust in a coal mine are 2.5 milligrams per cubic metre of air.	In Queensland, under section 89 of the Regulation, coal mines must ensure respirable coal dust in the atmosphere does not exceed an average concentration of 3 milligrams per cubic metre ($3mg/m^3$) for an eight hour period calculated under Australian Standard 2985: Workplace atmospheres – method for sampling and gravimetric determination of respirable dust. This is based on the workplace exposure standards set by Safe Work Australia. In 2015, Safe Work Australia (SWA) commenced the process to perform a review of workplace exposure standards for more than 600 airborne contaminants. DNRM is supportive of Safe Work Australia's review of national standards for airborne contaminants such as coal dust. Any changes to exposure standards in Queensland for respirable coal dust will be informed by Safe Work Australia's findings.
033	Coal Services	Dust monitoring	Suggests the provider of statutory monitoring must be *independent* of the mine and must be licensed by the NSW Department of Industry (Division of Resources and Energy).	Coal Services Pty Limited conducts dust monitoring in accordance with Order 42 to comply with their duties outlined in the *Coal Industry Act 2001* (NSW). In addition, coal mine operators must use a licensed provider to sample and analyse airborne dust under Part 9 of the NSW Work Health and Safety (Mines) Regulation 2014. In practice, Coal Services, as a licensed provider, commonly undertake this sampling concurrently with Order 42 sampling.

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				Currently, there are no licensing requirements for persons undertaking dust monitoring in Queensland. Mine sites engage suitably qualified companies to conduct personal monitoring and report these results back to the mine. These reports are supported by field observations and recommendations to control exposure. It is the mines' responsibility to review these results, consider recommendations and control exposures. The results provided by monitoring companies have clearly identified exceedances. The department has acted on these exceedances during recent data reviews. DNRM is working with industry to develop a recognised standard for dust monitoring in addition to a new dust reporting database. The dust monitoring standard will provide a standardised method for collecting respirable dust data. This will improve data quality and integrity and enable the Mines Inspectorate to oversee compliance with dust levels at the individual level, at the similar exposure group level, across an entire coal mining operation and across the coal mining industry – and take corrective action where needed. The department is proposing that for the recognised standard for dust monitoring that only independent, experienced, and Certified Occupational Hygienists should design, plan and report on the assessment of workplace dust exposures.
033	Coal Services	Longwall dust abatement approvals	Notes Order 40 which requires the consent of the Coal Services Board prior to the installation of a longwall or a shortwall unit underground and prior to its installation on a new longwall block or shortwall pillar or panel, as the case may be, including a review of previous results for the mine and the use of additional conditions as required.	In Queensland, there is no comparable requirement to obtain consent in these circumstances. Under the Queensland framework, mine operators are required to proactively review their safety and health management system to ensure the system is effective, and adapts to the changing environment and interdependencies of complex mining operations. The Queensland framework enables statutory officers such as the mine's Site Senior Executive (SSE), Site Safety and Health Representative (SSHR), Industry Safety and Health Representative (ISHR), mines inspectors, authorised officers and mine workers to play a proactive role in reviewing, inspecting or auditing the safety and health management system. In Queensland, coal mines must ensure respirable coal dust in the atmosphere does not exceed an average concentration of 3 milligrams per cubic metre ($3mg/m^3$). Effective dust control

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				procedures can vary from mine to mine and it is the responsibility of the mine's SSE to determine the most effective method for dust control at that mine following a risk assessment. As part of its program of work, and in relation to dust control, the Mines Inspectorate audits and inspects mines' safety and health management systems, presents to industry, workers and union representatives on the importance of dust control and monitoring, and direct mines to address issues identified by inspectors. For example, in 2013 and 2014 the Mines Inspectorate issued directives to reduce dust levels below 3mg/m^3 in relation to longwall operations. Amendments to the regulation have been developed together with employee and employer representatives. The changes, commencing on 1 January 2017, will strengthen respirable dust management requirements by requiring all coal mines to: • regularly report dust monitoring records to the Mines Inspectorate – for underground longwall and development operations, at least every 3 months • advise inspectors every time dust concentrations exceed prescribed levels.
033	Coal Services	Dust monitoring	Notes Order 42, and specifically the use of gravimetric sampling, the requirement to monitor crews in separate work areas, and the process in the case of an exceedance.	Order 42 provides Coal Services Inspectors with power to enter coal mines to undertake monitoring. The Schedule to this order sets out the locations, frequencies and persons for sampling. Legislation requires that Queensland mines must carry out respirable dust monitoring in accordance with AS2985. This standard requires gravimetric sampling with size selective cyclone to capture only respirable dust, which is less than 10 microns. In Queensland the monitoring program requires that monitoring be conducted across all similar exposures groups and in all locations at the mine. This includes activities such as maintenance, secondary support, stone drivage and construction. The regulation requires that a mine's safety and health management system must provide for the monitoring and recording of dust concentration levels. The results must be kept in a location

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				that is easily accessible by each worker at the mine and the records must be kept for 30 years. Regulatory amendments are due to commence in January 2017 which will introduce the new requirement for inspectors to be advised every time dust concentrations exceed prescribed levels. This new requirement also requires the Site Senior Executive (SSE) to ensure the cause of high average concentration is investigated and the results of the investigation are recorded and analysed to identify trends and issues with the coal mine's safety and health management system. A notification of relevant persons is also required, including the Inspectorate. A sample of the atmosphere of the work environment take will be required to be taken within 2 weeks after the first trigger event with the view to identify whether the exceedance levels repeat. Should a repeat incident occur, under the new regulatory framework, the SSE must again ensure that the cause of the continued high average concentration is investigated, investigation is recorded and analysed and the persons notified
033	Coal Services	Dust committee	Notes the Airborne Contaminants and Diesel Particulate Sub Committee (also known as the Standing Dust Committee (SDC)) monitors results of the dust sampling program, reviews exceedances, evaluates hazards, undertakes research and provides education. It includes independent industry experts as well as the primary stakeholders.	Data reported from respirable dust monitoring at all mines sites on a quarterly basis will be reviewed by a respirable dust committee with a similar governance structure and operation to the Standing Dust Committee currently in operation in NSW.
033	Coal Services	Health surveillance requirements	Notes the Order 41 health assessment is required every three years. Notes chest X-rays are required every six years for underground miners and every 12 years for aboveground miners.	Requirements for health assessments in Queensland are similar to New South Wales. However, in Queensland, health assessments are required at least every five years. Recent regulatory amendments that come into effect on 1 January 2017 will clarify that respiratory function (spirometry) and chest X-ray examinations must occur at least once every 10 years for aboveground coal mine workers and at least once every five years for underground coal mine workers. DNRM is consulting with stakeholders on a new

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				Queensland X-ray screening program and is currently considering feedback on an improved screening program for coal workers.

Annex B- Queensland coal mining industry summary (December 2016)

Geological context

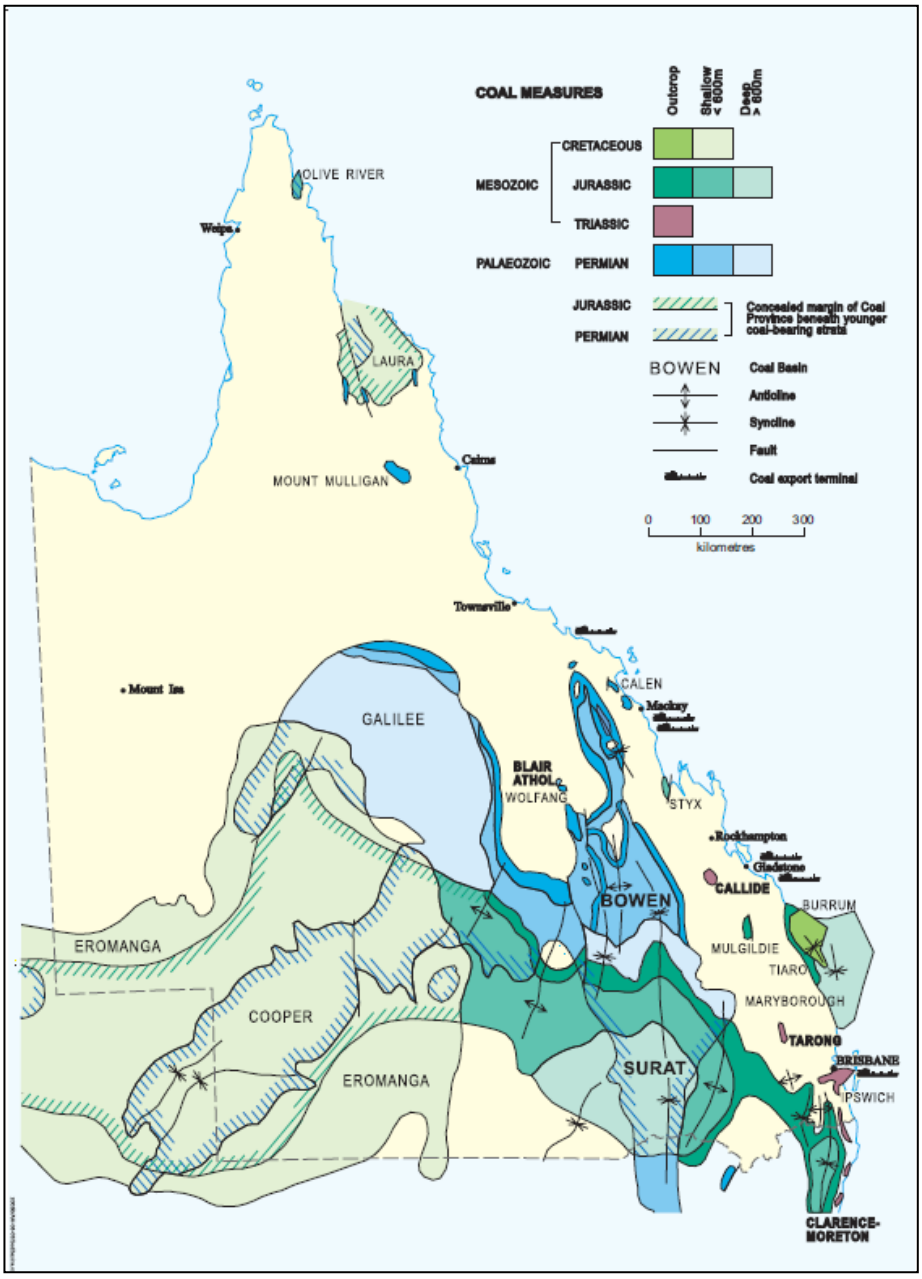
Queensland has 27 geological basins, many of which contain coal bearing formations. The largest formations of coal and associated mining activity occur in the Bowen and Surat Basins, with relatively smaller scale occurrences and mining activity in the Tarong, Callide and Ipswich Basins. Coal occurs in various other basins across Queensland where mining was or has not commenced (e.g. Galilee Basin), or else has ceased (e.g. Mt Mulligan).

The State's in-ground coal resources are vast, estimated to be at least 35 billion tonnes, of which about 25% (8.75 billion tonnes) are coking (or metallurgical coal used in steel making) and the remainder thermal coal (used primarily in electricity generation). Coking coal also includes a form used for injection into a blast furnace in pulverised form, with that coal termed "PCI" meaning "pulverised coal injection".

The Bowen Basin contains high quality coking coal and is the largest mining province in Queensland. It produced the vast majority (~90%) of the 244 million tonnes of coal produced in Queensland in 2015/16.

There are currently 43 coal mines in the Bowen Basin, of which 11 are underground operations. Of these 11 underground mines, all but two utilise longwall mining as their primary production methodology, with continuous miners used for roadway development to support longwall establishment.

Figure 1: Queensland Sedimentary Basins



The coal measure sequences present in the Bowen Basin are presented in **Table 1**. Underground mining is only undertaken currently in 2 of these 5 coal facies groups, being the Moranbah Coal Measures / German Creek Formation (Group III) and the Rangal Coal Measures and equivalents (Group V). Historically, underground mining was also undertaken within Group II coals at Blair Athol and at Collinsville. The coals of greatest commercial value are the high quality metallurgical coals produced from Group III coals whilst Group V coals provide a variety of metallurgical and thermal coal products.

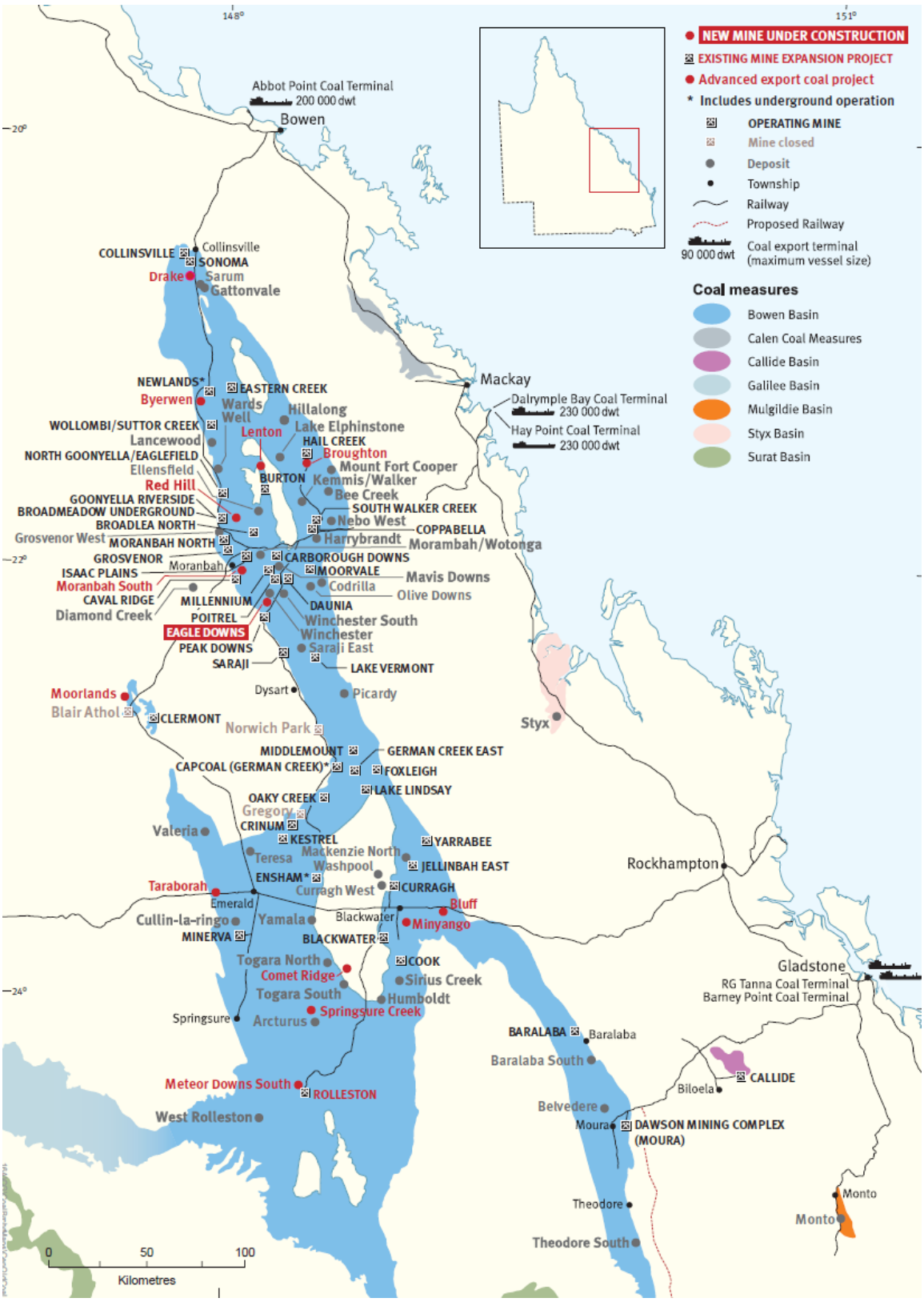


Figure 2: Bowen Basin Coal Mines and Projects

Table 1: Coal groups of the Bowen Basin[14]

Coal 'group'	Coal Measures	Interpreted coal facies	Rv (%)	Mines	Under-ground Mine	Product Type
V	Rangal Coal Measures; Baralaba Coal Measures; Bandanna Formation	Fluvial, deltaic	0.6-2.6	Yes	Yes	Thermal, PCI, Coking
IV	Fort Cooper Coal Measures; Burngrove Formation; Fair Hill Formation; Burunga Formation; Tinowon Formation	Fluvial, deltaic	0.5-2.5	No	No	Coking properties but high inherent ash
III	Moranbah Coal Measures; German Creek Formation	Delta, delta plain	0.6-3.5	Yes	Yes	Coking
II	Collinsville Coal Measures; Blair Athol Coal Measures; Clermont deposit; Rugby 'Coal Measures'	Delta, back barrier, fluvial	0.7-2.2	Yes	No	Coking; Thermal
I	Reids Dome beds	Fluvial	0.6-1.4	Yes	No	Thermal

Other coal basins in the southeast of the state are sources of thermal coal for both export and domestic markets. These include the Tarong Basin, the Callide Basin, the Ipswich Basin and the Surat Basin, all of which only have open-cut mining operations being undertaken at the present time (**Figure 3**). There are a total of 7 mines currently operating in these basins.

[14] Modified from Draper (2013)

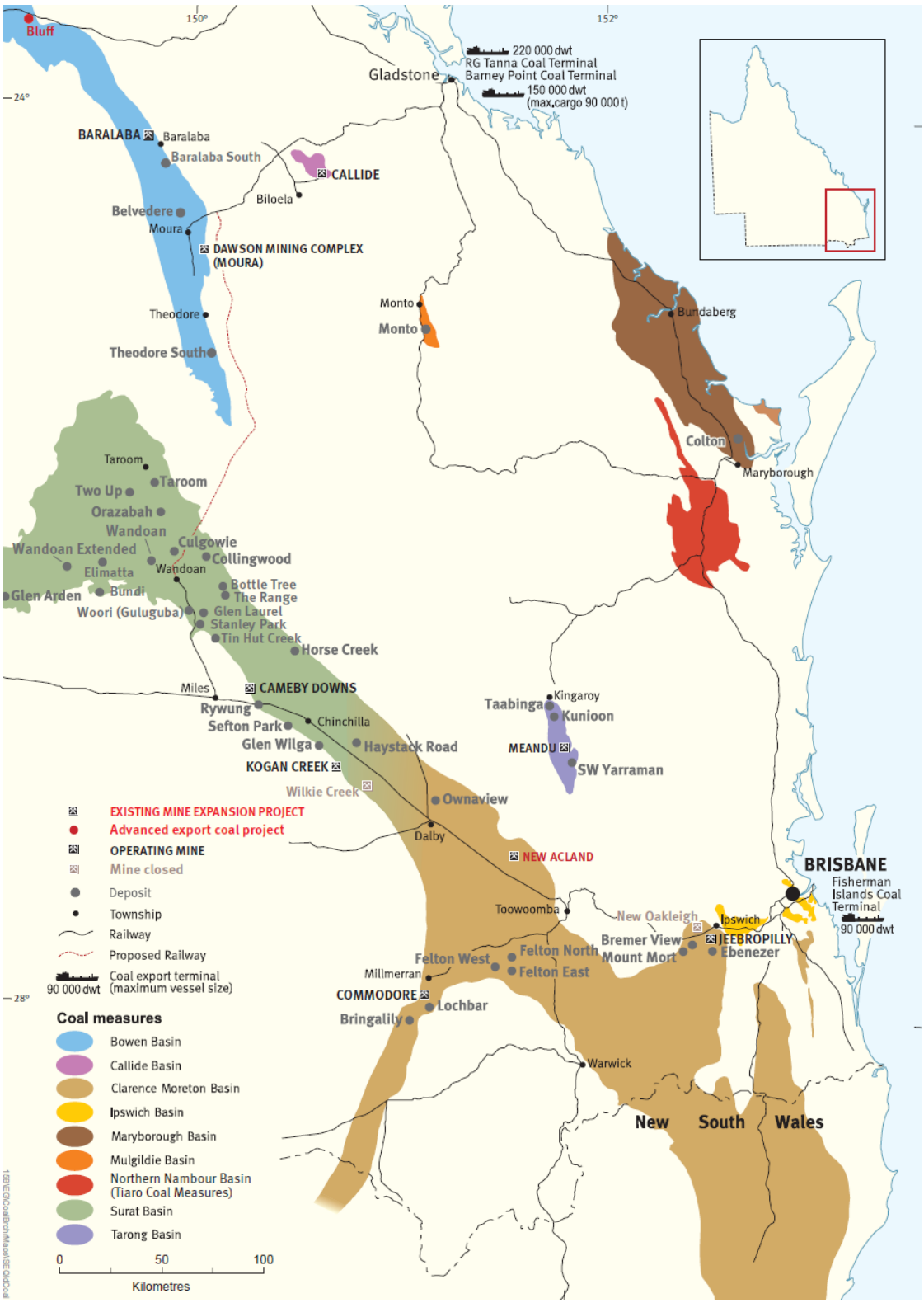


Figure 3: South East Queensland Coal Mines and Projects

Current operating coal mines are shown in Table 2 by the coal type produced and the coal measures they are extracting (by group for Bowen Basin mines and by basin for others). Mines in red text are underground operations. Grosvenor is highlighted as the newest mine having started production in April 2015. There are 15 coal mines operating in the Group III coal measures of which 8 are underground operations. The lower rank Group V coal measures have more mines (25) but fewer underground operations (3). All other mines (10) are open cut.

Table 2: Coal mines, product type and coal measures[15]

COKING	group	THERMAL + COKING	group	THERMAL	group
Broadmeadow	III	Blackwater	V	Callide & Boundary Hill	Callide
Carborough Downs	V	Burton	V	Cameby Downs	Surat
Coppabella	V	Caval Ridge	III	Clermont	II
Daunia	V	Collinsville	II	Commodore	CM
German Creek - Grasstree	III	Cook	V	Ensham OC	V
Goonyella - Riverside	III	Curragh	V	Ensham UG	V
Grosvenor	**III**	Dawson	V	Jeebropilly	CM
Lake Vermont	V	Drake	III	Kogan Creek	Surat
Middlemount	V	Foxleigh	V	Meandu	Tarong
Millennium	V	German Creek - Lake Lindsay	V	Minerva	I
Moorvale	V	Hail Creek	V	New Acland	CM
Moranbah North	III	Isaac Plains	V	Rolleston	V
North Goonyella	III	Jellinbah East	V		
Oaky Creek No 1	III	Kestrel	III		
Oaky North	III	Newlands	V		
Peak Downs	III	Newlands Eastern Creek	V		
Poitrel	V	Newlands Wollombi	III		
Saraji	III	Sonoma / Jax	III		
South Walker Creek	V				
Yarrabee	V				

Saleable coal mined during 2014–2015 amounted to 243.6 million tonnes (Mt) of which 80% was contributed by 41 open cut mining operations. During this period, exports totalled 217.8 Mt, comprising 160.2 Mt of metallurgical coal (coking and PCI) and 57.6 Mt of thermal coal. Domestic sales of thermal coal within Queensland amounted to 22.2 Mt.

During 2014-2015, 13 underground mines contributed to production although in the past 18 months 3 underground mines have ceased production (Aquila, Crinum, Newlands Northern UG, the latter two being longwall operations), whilst 1 new underground longwall operation has commenced (Grosvenor) and another is in development (Eagle Downs). There are also open cut mines which have been depleted of economically recoverable coal (New Oakleigh, Suttor Creek, Gregory) or are on care and maintenance (Norwich Park, Blair Athol, Wilkie Creek).

[15] Based on information provided by industry to DNRM. Available at https://data.qld.gov.au/dataset/coal-industry-review-statistical-tables

Current production

The following tables show the production for each of Queensland's coal mines for the 2014-15 year. They also provide the name of the parent company and the geological basin in which the mine is located. Note that 'Coking' includes both coking and PCI coal.

Table 3 shows the values for each mine in alphabetical order but separated into 'Open cut' and 'Underground'.

Table 4 has the mines sorted by 'Principal Owner/Operator' with the totals provided for each one.

Table 3: Coal Production by Mine Type for 2014-15[16]

				Production
Mine	Mine Type	Company	Basin	Total
Baralaba	Open cut	Cockatoo	Bowen	730,600
Blackwater	Open cut	BHP Billiton	Bowen	14,843,923
Burton Coal	Open cut	Peabody	Bowen	1,424,186
Callide & Boundary Hill	Open cut	Anglo	Callide	7,644,939
Cameby Downs	Open cut	Yancoal	Surat	1,927,518
Caval Ridge	Open cut	BHP Billiton	Bowen	10,659,832
Clermont	Open cut	Glencore	Bowen	12,213,010
Collinsville Opencut	Open cut	Glencore	Bowen	4,727,554
Commodore	Open cut	Millmerran	Clarence Moreton	3,478,022
Coppabella	Open cut	Peabody	Bowen	4,610,616
Curragh	Open cut	Westfarmers	Bowen	15,157,786
Daunia	Open cut	BHP Billiton	Bowen	5,670,173
Dawson	Open cut	Anglo	Bowen	11,399,332
Drake Mine	Open cut	Qcoal	Bowen	897,326
Ensham OC	Open cut	Idemitsu	Bowen	2,560,030
Foxleigh	Open cut	Anglo	Bowen	4,290,810
German Creek	Open cut	Anglo	Bowen	239,015
German Creek - Lake Lindsay	Open cut	Anglo	Bowen	6,920,827
Goonyella - Riverside	Open cut	BHP Billiton	Bowen	15,348,550
Hail Creek	Open cut	Rio Tinto	Bowen	11,614,548
Isaac Plains	Open cut	Stanmore	Bowen	1,670,180
Jeebropilly	Open cut	New Hope	Clarence Moreton	1,163,656
Jellinbah East	Open cut	Jellinbah	Bowen	5,147,167
Kogan Creek	Open cut	CS Energy	Surat	2,660,646
Lake Vermont	Open cut	Jellinbah	Bowen	10,391,608
Meandu	Open cut	Stanwell	Tarong	4,800,283
Middlemount	Open cut	Peabody	Bowen	5,303,681
Millennium	Open cut	Peabody	Bowen	4,496,724
Minerva	Open cut	Sojitz	Bowen	2,359,272
Moorvale	Open cut	Peabody	Bowen	4,171,469
New Acland	Open cut	New Hope	Clarence Moreton	10,144,139
Newlands	Open cut	Glencore	Bowen	825,917
Newlands Eastern Creek	Open cut	Glencore	Bowen	3,940,875
Newlands Sutton Creek	Open cut	Glencore	Bowen	522,164
Newlands Wollombi	Open cut	Glencore	Bowen	37,819
Peak Downs	Open cut	BHP Billiton	Bowen	18,721,080
Poitrel	Open cut	BHP Billiton	Bowen	4,665,752
Rolleston	Open cut	Glencore	Bowen	10,711,291
Saraji	Open cut	BHP Billiton	Bowen	13,656,529
Sonoma Coal	Open cut	Qcoal	Bowen	4,814,854
South Walker Creek	Open cut	BHP Billiton	Bowen	6,198,254
Yarrabee	Open cut	Yancoal	Bowen	3,578,484
Open cut total				**256,340,441**
Broadmeadow*	Underground	BHP Billiton	Bowen	5,859,320
Caborough Downs	Underground	Vale	Bowen	4,108,925
Cook	Underground	Caledon	Bowen	1,544,576
Crinum	Underground	BHP Billiton	Bowen	7,303,683
Ensham UG*	Underground	Idemitsu	Bowen	2,263,302
German Creek - Grasstree	Underground	Anglo	Bowen	7,181,958
Grosvenor	Underground	Anglo	Bowen	224,074
Kestrel	Underground	Rio Tinto	Bowen	3,752,375
Moranbah North	Underground	Anglo	Bowen	7,062,973
Newlands Northern UG	Underground	Glencore	Bowen	2,045,141
North Goonyella	Underground	Peabody	Bowen	3,555,989
Oaky Creek No 1	Underground	Glencore	Bowen	3,798,815
Oaky North	Underground	Glencore	Bowen	4,817,652
Underground total				**53,518,783**
TOTAL				**309,859,224**

Relics = now closed

* Coal from the below mines is transferred for processing and blended for sale

Broadmeadow to Goonyella Riverside CHPP (coal handling and preparation plant)

Ensham underground to Ensham open cut CHPP

[16] Based on information provided by industry to DNRM. Available at https://data.qld.gov.au/dataset/coal-industry-review-statistical-tables

Table 4: Coal Production by Principal Mine Owner/Operator for 2014-15[17]

				Production
Mine	Mine Type	Company	Basin	Total
Callide & Boundary Hill	Open cut	Anglo	Callide	7,644,939
Dawson	Open cut	Anglo	Bowen	11,399,332
Foxleigh	Open cut	Anglo	Bowen	4,290,810
German Creek	Open cut	Anglo	Bowen	239,015
German Creek - Grasstree	Underground	Anglo	Bowen	7,181,958
German Creek - Lake Lindsay	Open cut	Anglo	Bowen	6,920,827
Grosvenor	Underground	Anglo	Bowen	224,074
Moranbah North	Underground	Anglo	Bowen	7,062,973
Anglo total				**44,963,928**
Blackwater	Open cut	BHP Billiton	Bowen	14,843,923
Broadmeadow*	Underground	BHP Billiton	Bowen	5,859,320
Caval Ridge	Open cut	BHP Billiton	Bowen	10,659,832
Crinum	Underground	BHP Billiton	Bowen	7,303,683
Daunia	Open cut	BHP Billiton	Bowen	5,670,173
Goonyella - Riverside	Open cut	BHP Billiton	Bowen	15,348,550
Peak Downs	Open cut	BHP Billiton	Bowen	18,721,080
Poitrel	Open cut	BHP Billiton	Bowen	4,665,752
Saraji	Open cut	BHP Billiton	Bowen	13,656,529
South Walker Creek	Open cut	BHP Billiton	Bowen	6,198,254
BHP Billiton total				**102,927,096**
Clermont	Open cut	Glencore	Bowen	12,213,010
Collinsville Opencut	Open cut	Glencore	Bowen	4,727,554
Newlands	Open cut	Glencore	Bowen	825,917
Newlands Eastern Creek	Open cut	Glencore	Bowen	3,940,875
Newlands Northern UG	Underground	Glencore	Bowen	2,045,141
Newlands Suttor Creek	Open cut	Glencore	Bowen	522,164
Newlands Wollombi	Open cut	Glencore	Bowen	37,819
Oaky Creek No 1	Underground	Glencore	Bowen	3,798,815
Oaky North	Underground	Glencore	Bowen	4,817,652
Rolleston	Open cut	Glencore	Bowen	10,711,291
Glencore total				**43,640,238**
Ensham OC	Open cut	Idemitsu	Bowen	2,560,030
Ensham UG*	Underground	Idemitsu	Bowen	2,263,302
Ensham total				**4,823,332**
Jellinbah East	Open cut	Jellinbah	Bowen	5,147,167
Lake Vermont	Open cut	Jellinbah	Bowen	10,391,608
Jellinbah total				**15,538,775**
Jeebropilly	Open cut	New Hope	Clarence Moreton	1,163,656
New Acland	Open cut	New Hope	Clarence Moreton	10,144,139
New Hope total				**11,307,795**
Burton Coal	Open cut	Peabody	Bowen	1,424,186
Coppabella	Open cut	Peabody	Bowen	4,610,616
Middlemount	Open cut	Peabody	Bowen	5,303,681
Millennium	Open cut	Peabody	Bowen	4,496,724
Moorvale	Open cut	Peabody	Bowen	4,171,469
North Goonyella	Underground	Peabody	Bowen	3,555,989
Peabody total				**23,562,665**
Drake Mine	Open cut	Qcoal	Bowen	897,326
Sonoma Coal	Open cut	Qcoal	Bowen	4,814,854
QCoal total				**5,712,180**
Hail Creek	Open cut	Rio Tinto	Bowen	11,614,548
Kestrel	Underground	Rio Tinto	Bowen	3,752,375
Rio Tinto total				**15,366,923**
Cameby Downs	Open cut	Yancoal	Surat	1,927,518
Yarrabee	Open cut	Yancoal	Bowen	3,578,484
Yancoal total				**5,506,002**
Baralaba	Open cut	Cockatoo	Bowen	730,600
Carborough Downs	Underground	Vale	Bowen	4,108,925
Cook	Underground	Caledon	Bowen	1,544,576
Curragh	Open cut	Wesfarmers	Bowen	15,157,786
Isaac Plains	Open cut	Stanmore	Bowen	1,670,180
Kogan Creek	Open cut	CS Energy	Surat	2,660,646
Meandu	Open cut	Stanwell	Tarong	4,800,283
Commodore	Open cut	Millmerran	Clarence Moreton	3,478,022
Minerva	Open cut	Sojitz	Bowen	2,359,272
Other total				**36,510,290**
TOTAL				**309,859,224**

By

[17] Based on information provided by industry to DNRM. Available at https://data.qld.gov.au/dataset/coal-industry-review-statistical-tables

Historical overview

Coal was discovered in Queensland in 1825 by Major Edmund Lockyer while exploring the region of the Brisbane River in southeast Queensland. The first coal mine opened at Redbank near Ipswich in ~1845. Coal was also discovered near Blackwater (Bowen Basin) in 1845. Coal was probably exported via Brisbane soon after that.

Coal mining became prolific in the Ipswich and West Moreton districts due to their proximity to the major population centre of the greater Brisbane area. Within that area there were 84 underground operations. These coal mines were the largest coal producers until the development of large scale export mines commenced in the early 1960s. Coal production from the Ipswich coalfield ceased in mid-2003 having supported economic coal mining for a period of about 160 years.

Other early coal mining occurred at Howard–Torbanlea (1866), Rosewood–Walloon district (1877), the Darling Downs–Allora/Clifton (1870), Ogmore–Styx River (1890) Blair Athol (1890), Baralaba (1917), Tolmies – near Blackwater (1892), Mount Mulligan (1910), and Collinsville (1917).

The Geological Survey of Queensland (GSQ) started exploration in 1878. The new deposits discovered has resulted in more than 30% of all operating coal mines.

In 1913 the total annual coal production in Queensland surpassed 1.0 million tonnes per annum (Mtpa) for the first time. It then reached 2.0 Mtpa in 1949 and surpassed 10 Mtpa in 1971 (**Figure 4**).

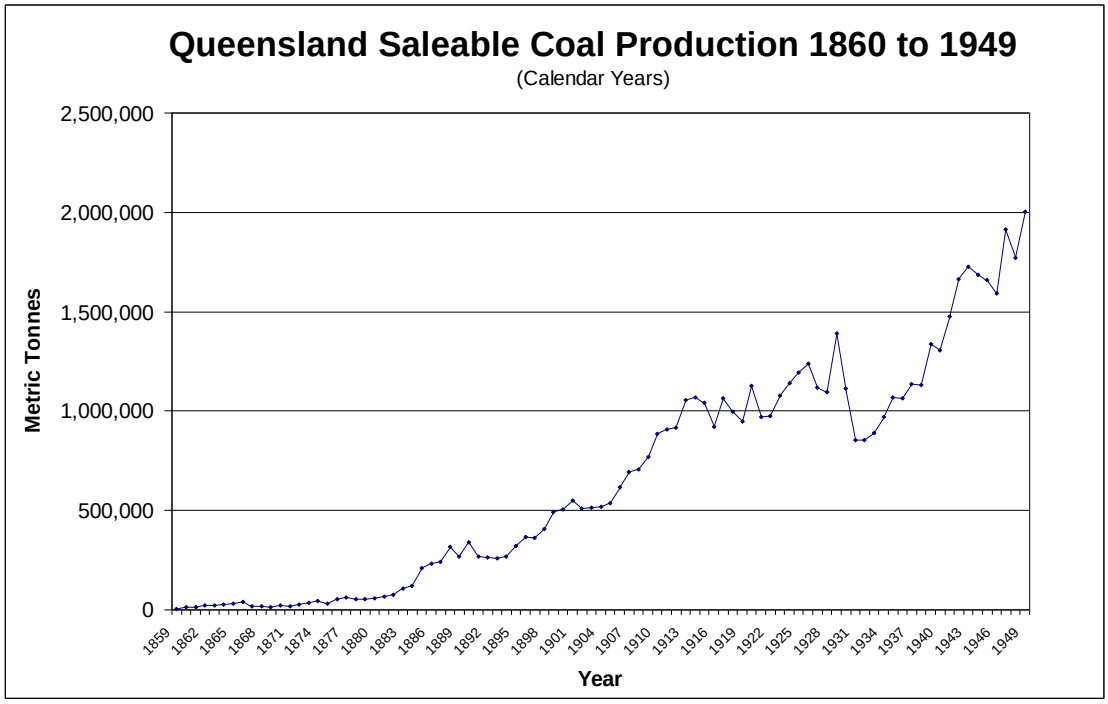


Figure 4: Queensland coal production and exports 1860 - 1949

The Queensland coal industry commenced a period of major growth in 1959 with the establishment of new export mines in the south-east Bowen Basin at Moura and Kianga in central Queensland. Both underground and open-cut operations were established and their total production was a mere 220,000 tonnes in 1961.

By 1965, coal exports from Queensland exceeded 1 Mtpa.

Large resources of high quality coking coal were discovered in the central and northern sectors of the Bowen Basin in the mid-1960s. Over the next 15 years numerous of large scale open-cut mining operations were developed in the region.

Underground mining was initiated in the Blackwater district in the late 1960s and early 1970s. Leichhardt Colliery commenced operations in 1971 and produced about 200,000 tonnes of coal over its 10 year life, closing in 1982.

Underground operations at Sirius Creek (1969 to 1972) produced a total of about 37,000 tonnes of coal. Both mines struggled with a combination of high seam gas levels and difficult mining conditions.

The South Blackwater mine started in 1969 with both open-cut and underground (Laleham No1) operations. The Laleham underground was operated as a continuous miner operation, undertaking secondary pillar extraction on retreat. Operations commenced in 1970 -71 and the mine was closed in early 2001.

Cook Colliery started in 1974 and remains in operation today using bord and pillar mining methods with continuous mining machines. For a brief period beginning in the latter part of 1988, the mine utilised mechanised longwall mining techniques, but due to very difficult mining conditions the equipment was subsequently decommissioned sometime between 1991/1992.

In 1970 trial open-cut mining commenced at Yarrabee. Mining at commercial scale did not occur until 1981-82 when 142,000 tonnes of semi-anthracite was produced for the export market.

In the period from 1971 to 1979 new open-cut mines were developed at Goonyella, Peak Downs, Saraji and Norwich Park.

During the period 1978 to September 1987 trial underground mining operations occurred at the Harrow Creek Colliery (which was located within the Peak Downs mining leases).

By 1975–76, coal exports had increased to 16.4 Mtpa and ten years later Queensland's coal exports surpassed 50 Mtpa. In the 1999-2000 financial year, coal exports from Queensland exceed 100 Mtpa for the first time (**Figure 5**).

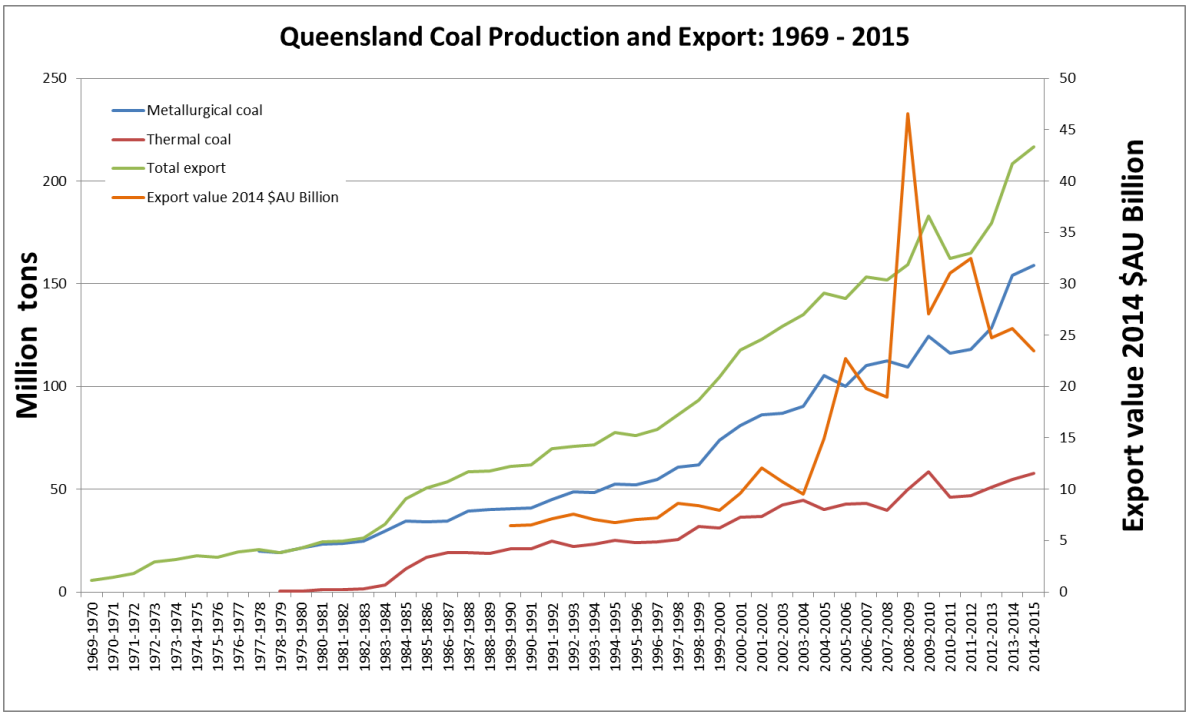


Figure 5: Queensland coal production and exports 1969 - 2015

Queensland coal production and exports were boosted from 2006 when a number of new mines commenced. These included open cut operations at Broadlea North, Isaac Plains, Kogan Creek (domestic supply only), Lake Lindsay, Millennium, Poitrel and Wollombi while new underground mines, Carborough Downs and Newlands Northern underground were established and the Grasstree underground mine commenced high productivity longwall mining. In 2007-08 coal exports from Queensland had increased to 153.3 Mt.

Queensland's coal exports set a new record of 183 Mt in 2009–10 but decreased to approximately 163 million tonnes in 2010–11 as a result of major flooding that disrupted open cut mines and caused major damage to coal transport and civil infrastructure.

Mechanisation

In 1950 coal production in Queensland amounted to little more than 2.3 Mt, of which 80% came from more than 80 underground mines which were virtually all worked by hand, with very little in the way of mechanisation (Mengel et. al., 1990). The remaining production came from two open-cut mines, Blair Athol and Callide. Most of the mines operated in the Ipswich Coalfield west of Brisbane and were run by working proprietors, individual and family owners, or small syndicates and owners.

The commencement of large scaled open-cut mining in the Bowen Basin commenced in the 1960s firstly at Moura, then at Blackwater (1969) with the first introduction of electric walking draglines for overburden removal, supported by large truck fleets for the transportation of raw mined coal to the coal preparation facility and railhead.

By 1985 more than 50 Mt of coal was produced in the State, with open-cut operations accounting for more than 90% of production. Thirty years later, production has increased nearly 5 times to more than 240 Mt with 15% coming from underground mines.

- 1985 5 Mt UG
- 2015 >40 Mt UG

The first continuous miner to be used underground in Queensland was installed at Box Flat No. 5 Mine in the Ipswich Coalfield around 1960. By 1963, three such machines (Le Norse) were being used in underground mines in southern Queensland.

A Marietta (borer-type) machine was brought into operation at Westfalen No. 3 (Collingwood Park area) on the Ipswich Coalfield in 1969 to develop an area of the mine where the coal seam thickened considerably.

By 1970, more than 95 per cent of the coal production from underground mines operating in Queensland was won using what was regarded as being 'completely mechanised' methods. About 2.5 per cent of production was still obtained using hand mining methods at this time with the remainder of mines using some form of mechanisation (Queensland Coal Board 20th Annual Report).

In June 1986, the first mechanised longwall mining unit to operate in Queensland was installed underground at Central Colliery on the German Creek mining leases (Queensland Coal Board, 36th Annual Report). The mine commenced operations in the 1982-1983 financial year and ceased operations during the 2006-2007 financial year.

Subsequently mechanised longwall equipment has been installed in almost all underground mines developed in Queensland. This mining method is now the preferred technique used by all but 2 of the underground mines operating in Queensland. Two mines (Broadmeadow, North Goonyella) are now also using the top coal caving method (LTCC) to recover more of the thicker seams.

The approximate chronologic order of the installation and commissioning of longwall equipment in Queensland coal mines is provided in Table 4 and described in the following text. Note that there are a total of 17 longwall operations of which 9 are still operating.

Table 4: Longwall Mines Opening and Closing Dates[18]

Longwall Mine	Commenced Operations	Ceased Operations
German Creek - Central	June 4th, 1986	December 31st, 2005
German Creek - Southern	December, 1989	June, 2006
Oaky Creek - No. 1	November, 1990	
Kestrel / Gordonstone	April, 1993	
North Goonyella	1993	
Kenmare	November, 1996	April, 2002
Crinum	June, 1997	November, 2015
Alliance	October, 1997	February, 2002
Newlands Underground	1998	September, 2005
Oaky North	February, 1999	
Moranbah North	January, 1999	
Broadmeadow	August 24th, 2005	
German Creek - Bundoora	2005	September, 2011
German Creek - Grasstree	September, 2006	
Newlands - Northern	February, 2006	June, 2016
Carborough Downs	September, 2009	
Grosvenor	May, 2016	

Central – German Creek; Longwall commissioned June 1986 – mine commenced operations 1984. Mine cease production December 2005 – January 2006. Mine closed.

Cook Colliery; longwall commissioned mid 1988 – mine commenced as bord and pillar 1974. longwall operates briefly for about 7 to 9 blocks before reverting to bord and pillar operation due to difficult mining conditions. Mine still operating using bord and pillar only.

Southern – German Creek; December 1989 commences – mine closes with cessation of longwall operations in June 2006. Mine closed.

Oaky No1; Longwall commissioned November 1990. Mine still operating.

Kestrel; (originally Gordonstone under ownership of Arco, now Kestrel under changed ownership). First longwall began producing coal April 1993 – second longwall commissioned July 1994 – both under Arco ownership. Mine subsequently placed on care and maintenance due to long running industrial dispute. Mine changed hands and was renamed Kestrel with Rio Tinto as operator. Mine still operating.

North Goonyella; (recently LTCC equipment installed UG). Mine construction commenced in April 1992. Longwall commissioned 1993. Longwall top coal caving equipment installed sometime during 2013. Mine still operating.

Crinum; longwall commissioned June 1997. Mine ceased production in Q1 2016. Mine closed.

Oaky North; Roadway development commenced July 1996. Longwall commenced operations in 1998-99. Mine still operating.

Alliance Colliery; Operated as a contract 'punch longwall' operation at Oaky Creek. Operated from 1997 and closed February 2002.

Kenmare; mine worked in multiple seams. Commences production in June 1994 in the Pollux Seam – first longwall coal produced in November 1996. Third panel extraction begins July 1998. Mining in Pollux ceases in about 2000, due to

[18] Based on DNRM's historic mine records.

issues with faulting and other geological issues. Workings relocate to the overlying Aries Seam (Kenmare No 2) for a short while before mine closure in 2001-2002 – longwall face lost with equipment stranded underground- had to be recovered using dragline – refurbished and put into service at Broadmeadow. Mine closed.

Newlands Underground; longwall operations commenced 1998-99. Longwall operations cease September 2005. Replaced by production from Newlands Northern Underground. Mine closed.

Newlands Northern Underground; Longwall operations commence February 2006. Longwall operations ceased June 2016. Mine on care and maintenance pending closure.

Moranbah North; Roadway development commenced in July 1997. Longwall commenced operations in January 1999. Mine still operating.

Grasstree; German Creek Construction commences early 2001 with sinking of twin shafts. Full production commenced late 2006 with commissioning of longwall. Mine still operating.

Broadmeadow; August 2005 first longwall commissioned using reconditioned equipment from Kenmare – more recently LTCC equipment also installed- March 2013. Mine still operating.

Carborough Downs; September 2006, coal production commences using bord and pillar. Longwall commissioned September 2009. Mine still operating.

Grosvenor; longwall commissioned May 2016. Mine operating.

Notes on geology, coal type and rank

Coal is a sedimentary rock with a very complex and variable chemistry. It can be described and/or classified in a number of different ways.

These include categorisation by: geological age (e.g. Permian, Jurassic), rank or degree of coalification (e.g. high, low), class (e.g. bituminous, anthracitic), coal lithotype (e.g. vitrinite, inertinite), use (e.g. thermal coal, coking, pulverised coal injection (PCI)) and quality parameters or characteristics (e.g. high volatile, low ash, hard coking). These are also other classification schemes that are used based largely upon the chemistry of the coal (e.g. ASTM, Seyler's, Mott's).

Coal traded commercially is most commonly referred to and sold on the basis of its end use. This is generally simplified by dividing coals into two main groups as either coal used for its energy content (thermal coal) or coal used for steel making (metallurgical coal). The latter group includes coals used to make coke and coal used for PCI.

All coals may be used as thermal coal, although the ability of a coal to produce coke (coking coal) is a function of coal type and rank. At times PCI coal is sold into the thermal coal market, dependant on market conditions (usually when demand is down and prices are low).

Coal mines can be categorised in a number of ways including their mining method (open-cut, underground), coal measures (Group IV), coal seam geology (thick seam, multi-seam), or size (volume of production or sales) etc. Mining methods vary but are broadly categorised as either open cut (strip, open cast), or underground (longwall, bord and pillar). Other 'hybrid' methods may be used such as the use of 'highwall mining' (a method sometimes used when an open-cut mine reaches a depth beyond which further open-cut mining is commercially unviable). This method uses remotely operated mining equipment driven underground into the coal seam from the open cut pit.

For hard black coals (excludes lignite and other brown coals), the reflectance of the vitrinite maceral group (Rv max) in a coal is used internationally as a measure of its rank. The value is used as an indication of the rank (degree of coalification) of black coals. The higher the number the higher the rank of a coal. For a coal to have coking properties, Rv max values need to be in the range 0.9% to 1.7%. Optimum coking properties are developed in the range of about Rv max 1.1% to 1.3%.

Coal measure descriptions

Bowen Basin

The Bowen Basin is the most important of the Permian coal basins in Queensland, in terms of both coal resources and production. The coals present within it range in age from Early to Late Permian and exhibit significant variations in rank and quality, reflecting both the depositional and tectonic history of the basin.

Queensland coking coals produced for export from the Bowen Basin are generally low in ash (typically <12% adb), moisture and sulphur content (typically < 0.6% adb) (Mutton 2002, Table 16).

The main differences between the coals relate to their coal type (lithotype composition) rank and ash (or non-coal content). These factors influence dust particle size and dust make (concentration) of the coals mined in Queensland. Other coal property factors which influence dust generation include the in-situ moisture content and physical condition of the coal in-situ (e.g. blocky, massive, sheared, blasted etc.)

Group III coals

Coking coals produced from Group III seams (Moranbah Coal Measures & German Creek Formation, see Table 2) are typically medium to high volatile bituminous coals, have a high vitrinite content and comprise the best quality coking coals produced in Queensland (generally described as 'prime hard coking coals').

Physically, Group III coals mined in Queensland could generally be described as being relatively weak and friable. An analytical measure used to determine relative hardness or resistance to grinding, is the Hardgrove Grindability Index (HGI) which is determined through simulated milling in the laboratory. HGI values of the Group III coals are generally high indicating that they are relatively soft. By comparison, other types of coal mined in Queensland such as the thermal coals in the Surat Basin, are much harder.

Along the Collinsville Shelf of the western part of the northern Bowen Basin, the Moranbah Coal Measures contain from three to eight coal seams and host the seams currently mined at the large scale open-cut strip mines of Goonyella-Riverside, Caval Ridge, Peak Downs, and Saraji. The rank of the coal seams mined at these operations progressively decreases from the Goonyella-Riverside operation in the north southwards through the Caval Ridge, Peak Downs, Saraji and Norwich Park mines.

Other mines in the northern Bowen Basin extracting coal from the Moranbah Coal Measures include the Sonoma open-cut near Collinsville, the smaller open-cut operations at Eaglefield and Wollombi, as well as the Grosvenor, Moranbah North, Broadmeadow and North Goonyella underground mines. The Eagle Downs underground mine, currently under construction, will also extract coal from seams within the Moranbah Coal Measures.

Most of the coal seams of the Moranbah Coal Measures pass laterally into the upper part of the German Creek Formation (Koppe, 1978). The underground mines in the German Creek Formation include those the Grasstree Mine at German Creek, Oaky Creek (No. 1 and North), and Kestrel. The Crinum underground and Gregory open cut have recently closed whilst the Norwich Park open cut has been on care and maintenance since 2012.

Eight of the current 11 operating underground mines are in the Group III coal measures.

Group V coals

In comparison to the Group III coals, coking coals produced from Group V coal seams (Rangal / Baralaba / Bandanna, see Table 2) have a lower vitrinite content, and as a result, a duller visual appearance. These coals make softer coke and are often generally described as 'soft' or 'semi-soft coking coals', dependent upon the nature of the coke produced. A variety of coal products are derived from Group V coals ranging from PCI and semi-soft coking coal to a range of thermal coals of varying specifications.

HGI values of the Group V coals are often lower than those of the Group III prime hard coking coals, although not as low as the coals in the Surat Basin.

Three underground mines currently extract coal from Group V seams: Carborough Downs (longwall), Ensham (bord and pillar) and Cook Colliery (bord and pillar).

Other coal groups

Also mined in the Bowen Basin are coal seams from the Reids Dome beds (Group I coals) south of Emerald (Minerva open-cut) and Group II coal seams within the Blair Athol Coal Measures (Clermont Mine) and their lateral equivalents in the northern Bowen Basin, the Collinsville Coal Measures (Collinsville Mine).

The (Group II) coal mined at Blair Athol and at the Clermont Mine, with an equivalent age geologically as the coals mined at Collinsville, are significantly different in terms of their properties and end use. The coals at Blair Athol and Clermont are much lower in rank, have no coking properties and are used as thermal coals. The coal mined has been described as being low rank, medium to high volatile bituminous, durainous, and non-coking.

Large scale open-cut mining commenced at Blair Athol in 1984, although there had been much earlier initial attempts to mine coal using underground methods following the initial discovery of the field in the late Nineteenth Century, and subsequently, by small scaled open-cut mining methods (the best available at that time) in the early to mid-Twentieth Century. Mining ceased in late 2012.

The Group II coals mined at Collinsville however, at the northern extremity of the Bowen Basin, are strongly coking, much higher in rank and high in sulphur. Mining methods are currently only open-cut but historically, have included a number of underground mines, some State owned and operated at one time, working a number of different seams.

The coal seams at Collinsville are heavily intruded in places and at depth are known to contain high concentrations of carbon dioxide gas (CO_2) which is an issue that has resulted in loss of life underground (the Collinsville State Mine, No 1 Tunnel disaster in October 1954, 7 men killed. A Royal Commission followed). Hand mining underground at the Collinsville State Mines ceased in 1953 although horse haulage underground continued until 1989. The Collinsville State Mines were taken over by Dacon Collieries in 1961.

The last underground mining operation at Collinsville was the Bocum Mine (a conventional bord and pillar operation) which closed in December 1997.

Mount Mulligan

Mount Mulligan is located in northern Queensland about 100 km west of Cairns. The coals are of Permian age and occur as an isolated occurrence (approximately 18 km long) lying preserved beneath an overlying sandstone unit of Triassic age (the Pepper Pot Sandstone).

Coal was discovered there in 1907 and the Queensland Government commenced mining operations there in 1923. Three separate seams were mined at Mount Mulligan from a number of different mines during the period spanning 1914 and 1957, all by hand worked underground mining methods.

This was the site of Queensland worst coal mining disaster in September 1921, when 76 men were killed as the result of an explosion underground.

The coal has been described as being, of medium to low rank, medium to high volatile bituminous with medium to weak coking properties.

Although some coke was produced from the coal for local use, it was used almost entirely as thermal coal for steam raising.

Ipswich Basin

The Ipswich Basin was the source of the majority of coal produced in Queensland for more than a century during the formative times post colonisation. The seams of economic interest lie within the Triassic age Tivoli and Blackstone Formations of the Ipswich Coal Measures. More than twenty different seams were mined at various times during the history of the coalfield.

The seams are typically banded, and lenticular – frequently splitting and coalescing over relatively short distances. The coal mined at North Ipswich has been described having a high, as mined ash content due to the banded nature of the seams. The coal itself is described as being medium-high volatile bituminous, of medium rank and strongly coking.

The last underground mine to operate in the Ipswich Coalfield (New Hill Mine) closed in August 1997. Mining ceased in the coalfield in July 2003 after more than 150 years of mining. For most of this time, underground mining dominated.

Callide Basin

The Triassic age Callide Coal Measures contain four persistent seams, of which, the Callide Seam is the seam of principal economic importance. The seam ranges up to 26 metres in thickness and is quite banded. The open cut mine operates as a series of separate pits.

The coal is mainly used for domestic power generation in the nearby Callide Power Station. The coal is dull, non-coking, relatively low in rank and is classified as sub-bituminous, medium to high volatile.

Tarong Basin

The Tarong Basin is a small fault-bounded basin, situated about 190 km northwest of Brisbane. The Meandu open cut mine is the only mine operating in this basin. It supplies coal to the nearby Tarong Power Stations. The Triassic age Tarong Beds contain at least six coal seams, two of which, the King and Meandu seams are the main seams of commercial interest at Meandu Mine. These coals and are regarded as being similar in age to the lower part of the Ipswich Coal Measures (Tivoli Formation) and slightly older than the Callide Coal Measures. The seams have high raw ash values (25 to 45 % adb), and are of medium rank (Rv max 1%).

The mine commenced operation in 1983 just prior to the commissioning of the first of the Tarong Power Stations in early 1984.

Surat and Clarence Moreton basins

The Jurassic age coals of the Surat and Clarence Moreton basins are contained with the Walloon Coal Measures. Coal typically occurs in two thick intervals of interbedded mudstones, siltstones, sandstones with coal seams up to 3 to 4 metres in thickness, throughout each. The coal seams tend to be lenticular laterally. These two coal-bearing intervals are separated by up to 100 metres of relatively coal barren strata. The Rosewood Coalfield just to the west of Brisbane was mined for many years by small scaled underground operations and more recently by open-cut operations.

The last underground mine to operate in this coalfield, Oakleigh Colliery, closed in July 1997. The mine which commenced operations in 1929 as an underground operation, was one of the last small family owned operations in Queensland at that time, employing a small local workforce. The coalfield is located within the Clarence Moreton Basin.

In the far northern part of the adjoining Surat Basin, underground mining has been limited to a few operations between Warra and Injune. Maranoa (underground) Colliery near Injune operated for about 30 until it closed in 1963. Small workings were also operated near Warra during the period 1914-1919.

Coals within the Surat and Clarence-Moreton basin are described as being very high volatile, bituminous, of low rank and are non-coking. The coals are considerably harder than the coals in the Bowen Basin and are considered ideal for liquefaction due to their (coal lithotype) composition.

Mulgildie Basin

The coals once mined at the Selene underground mine just to the south of Monto, are considered to be age equivalents of the Jurassic coals of the Surat and Clarence-Moreton basins.

This underground mine operated between 1949 and 1966, during which time it extracted about 510,000 tonnes of coal.

Maryborough Basin (Burrum Syncline)

The Maryborough Basin is located on the east coast of Queensland, between Maryborough in the south to north of Bundaberg. It occurs both on and offshore.

The coal seams of potential economic significance occur in the Cretaceous age Burrum Coal Measures. The more important coal seams (historically) are grouped in about 500 m of strata near the middle of the Burrum Coal Measures. The most extensively exploited seams are contained in a stratigraphic interval of approximately 160 m. Seams are relatively thin (workable sections not exceeding 2 m) and lenticular in nature and historically have only been workable over limited areas.

Coal mining commenced in the basin in 1866 and has been limited entirely to underground extraction. Most of the underground mines were located in the Burrum Syncline in around the towns of Howard and Torbanlea. Nearing the end of mining in the Burrum Coalfield, Burgowan No13 was forced to close in December 1979 due to the closure of the Power Station at Howard in mid-1980 as it was the main market for the coal produced. The last mine to operate on the coalfield, Burgowan No.12, closed in June 1997.

The Burrum coals have been described as medium to high volatile, bituminous, of medium rank and strongly coking. Historically, the coal has been used for steam raising (thermal coal) and to a lesser extent, gas making.

Styx Basin

The Styx Basin is located on the east coast of Queensland about 130 km north of Rockhampton.

In 1918, after a program of exploratory drilling near Tooloombah Creek, the Queensland Government opened up an exploratory shaft at Bowman, to exploit a promising seam. Production began at the Styx No1. State Colliery the following year and continued until 1921. A series of other State owned underground mines followed with the largest of them, the Styx No 3. State Colliery, operating between 1923 and 1963.

The coal seams have been described as being thin and banded, with the coal described being medium to high volatile, bituminous, of medium rank and weakly coking.

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Annex C – Coal companys' commitment to addressing CWP

12 July 2016

Hon Dr Anthony Lynham MP
Minister for State Development and
Minister for Natural Resources and Mines
PO Box 15216
CITY EAST QLD 4002

Dear Minister Lynham

As representatives of Queensland's eight underground coal mining businesses, we share your concerns about the re-emergence of coal workers' pneumoconiosis.

We reaffirm our commitment to providing our employees with a safe workplace and transitioning to an improved Coal Mine Workers' Health Scheme informed by the outcomes of the Monash Review.

We will continue to work with you, the Queensland Government, and medical experts to inform our workplace protocols.

In order to provide ongoing reassurance to our current workforce, we commit to the following interim protocol for the conduct and review of chest x-rays (CXR) whilst longer-term health assessment processes are established and legislated.

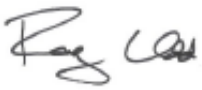
We will:

1. Offer any of our underground coal mine workers who has a concern about their respiratory health:
    - A review of their existing CXR, read to the International Labour Organisation (ILO) classification, by a radiologist nominated on the Royal Australian and New Zealand College of Radiologists (RANZCR) endorsed list, or by a "B" reader physician certified by the USA National Institute for Occupational Safety and Health (NIOSH), where they have a digital CXR that is less than two years old.
    - A new digital CXR read to the ILO classification by a radiologist nominated on the RANZCR-endorsed list, or by a "B" reader physician certified by NIOSH, where they have a CXR that is more than two years old, and/or on an analogue film.
2. All new chest x-rays taken as part of new coal mine worker medicals are to be digital x-rays, read to the ILO classification, by a radiologist nominated on the RANZCR-endorsed list, or by a "B" reader physician certified by NIOSH.

3. Adopt a two reader chest x-ray screening protocol, once an appropriate model is established.

Yours sincerely

David Diamond
Anglo American



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