QUEENSLAND resources COUNCIL

Working together for a shared future

8 March 2013

Committee Secretary
Senate Standing Committee on Community Affairs
PO Box 6100
Parliament House
Canberra ACT 2600
Australia

Subject: Inquiry into the impacts on health of air quality in Australia

Dear Members of the Senate Standing Committee on Community Affairs,

Please find enclosed the Queensland Resources Council's submission to the Senate Inquiry into the impacts on health of air quality in Australia. The Queensland Resources Council (QRC) is the peak representative organisation of the Queensland minerals and energy sector.

QRC thanks the Senate's Standing Committee on Community Affairs for the opportunity to provide a submission to the Inquiry into the impacts on health of air quality in Australia.

While the scope of the Terms of Reference to the Inquiry into the impacts on health of air quality in Australia extends to the all particulate matter, QRC has focussed this submission on the impacts of coal dust on the Queensland population. In particular the submission is focussed on discussing the facts regarding the impacts of coal dust, including discussion on the current leading practice solutions to the nuisance issue of coal dust and the ongoing implementation of the Central Queensland Coal Dust Management Plan.

Included in this submission are the following:

1. QRC's Executive Summary
2. An independent report commissioned by QRC on the assessment of health impacts on Brisbane residents from the training of coal through residential suburbs, completed by Katestone
3. Analysis by Connell Hatch Wagon Lids Analysis Environmental Evaluation Queensland Rail Limited
4. Western - Metropolitan Rail Systems Coal Dust Monitoring Program

As this independent report clearly demonstrates, there is no specific information that links health effects with dust emitted from trains carrying coal.

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Notwithstanding this, the resources sector has a significant interest in holding a strong social licence to operate, and as such takes air quality and community health and amenity very seriously. This is evidenced by the implementation of the coal dust management plan in Central Queensland and actions, facilitated through QRC, underway on the Western-Metropolitan line. These programs are explained in detail in our submission and the Katestone report.

QRC would be happy to provide the Senate Standing Committee with the results of the Western line monitoring and further updates on the implementation in Central Queensland as they come to hand.

Finally, QRC would be very happy to discuss the contents of this submission with the Inquiry, and can also arrange a meeting with our members for the Committee.

The QRC contacts on QRC's dust management work are

- Dr Petra Behrens, Economic Policy Adviser
- Frances Hayter Director Environment Policy

Yours sincerely

Michael Roche
Chief Executive

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QRC

Working together for a shared future

submission

To the Federal Senate Standing Committee on Community Affairs

Inquiry into the impacts on health of air quality in Australia

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1. EXECUTIVE SUMMARY

The Queensland Resources Council (QRC) is the peak representative organisation of the Queensland minerals and energy sector.

The QRC's membership encompasses minerals and energy exploration, production, and processing companies, and associated service companies. The QRC works on behalf of members to ensure Queensland's resources are developed profitably and competitively, in a socially and environmentally sustainable way.

QRC thanks the Senate's Standing Committee on Community Affairs for the opportunity to provide a submission to the Inquiry into the impacts on health of air quality in Australia.

In the 2011-2012 financial year approximately 300 million tonnes (Mt) of coal produced in Australia was exported to overseas markets (BREE, 2012). The Queensland coal industry is the largest in Australia with an estimated 34 billion tonnes of raw coal resources currently identified from drilling operations. A large proportion of coal production in Queensland is destined for overseas market. Recently there has been concern in some communities regarding potential health and amenity impacts that they associate with coal trains that pass through their communities during coal transit from mine to export terminal.

While the scope of the Terms of Reference to the Inquiry into the impacts on health of air quality in Australia extends to the all particulate matter, QRC has focussed this submission on the impacts of coal dust on the SEQ population. In particular the submission is limited to discussing the facts regarding the impacts of coal dust, including discussion on the current leading practice solutions to the nuisance issue of coal dust being raised in Brisbane, and the ongoing implementation of the Central Queensland Coal Dust Management Plan. This Plan was developed in response to the Queensland Government's requirement of Queensland Rail (now Aurizon) to undertake an Environmental Evaluation of the effects of coal dust in Central Queensland.

QRC engaged independent consultants from Katestone to assist in the development of a submission on behalf of QRC, particularly pertaining to the assessment of health impacts on Queensland residents from the training of coal through residential suburbs. As the Inquiry will see, despite claims to the contrary, there is no evidence of these impacts, and in fact the significant majority of air quality issues in urban areas come from other sources e.g. tyres during transport.

Katestone's report seeks to answer the following questions in relation to coal trains in Queensland:

- Is there evidence that coal dust is emitted from coal trains in transit?
- If so, what are the sources of coal dust emissions from coal trains?
- Further, what factors influence coal dust emissions from coal trains?

- What are the potential effects of coal dust in the community?
- Has air quality monitoring been conducted in the vicinity of rail corridors carrying coal trains and what does this monitoring show?
- If significant coal dust emissions are occurring can they be managed so they do not adversely impact the communities?

The full Katestone report is attached as Appendix A.

2. SOCIAL LICENCE TO OPERATE

The resources sector has a significant interest in holding a strong social licence to operate, and as such takes air quality and community health and amenity very seriously as evidenced by the leading practice, voluntary industry-driven coal dust management plan in Central Queensland and actions underway on the Western-Metropolitan line, which is discussed in greater detail in Section 9 of this submission.

As part of this social licence to operate and commitment to leading practice, QRC has facilitated the commitment of coal companies in South East Queensland and supply chain service providers to fund a comprehensive dust monitoring program at seven sites along the Western-Metropolitan rail corridor to the Port of Brisbane.

Baseline monitoring started in the first week of March 2013 and will continue through to early April 2013 when New Hope's New Acland mine (which accounts for around 60 percent of coal transported on this line) will commence veneering of its loaded coal wagons with a biodegradable polymer coating to prevent dust emissions.

The effectiveness of this veneering will then be measured through a further month long monitoring program at the same seven sites. Further to this, the other South East Queensland coal companies have committed to veneering their coal by the end of 2013, in line with the implementation timetable for mines in Central Queensland.

QRC would be happy to provide the Senate Standing Committee with the results of the Western line monitoring and further updates on the implementation in Central Queensland as they come to hand.

3. BACKGROUND ON COAL PRODUCTION AND TRANSPORT IN QUEENSLAND

In Queensland the largest and most active areas of existing and proposed coal production are the Clarence-Moreton Basin coal measure in southeast Queensland, the Surat Basin coal measure in south central Queensland, the Bowen Basin coal measure in central Queensland, and the Galilee Basin coal measure in central west Queensland.

Coal extracted from these areas is transported to one of six active coal export terminals via rail systems. There are five rail systems that connect the mines to the export terminals:

- Western System - connects to the Port of Brisbane
- Moura System - connects to the Port of Gladstone (two active terminals with a third under construction)
- Blackwater System – also connects to the Port of Gladstone

- Goonyella System - connects to the Port of Hay Point south of Mackay (two active terminals). The Goonyella-Abbot Point (GAP) Expansion connects the Goonyella and Newlands Systems and thereby connecting to the Port of Abbot Point.
- Newlands System - connects to the Port of Abbott Point (near Bowen)

The Goonyella System is the most active in Queensland and carries approximately 50% of the coal exported per annum to the Port of Hay Point south of Mackay. In 2010-2011, Aurizon estimated that 20 trains per day travelled on the Goonyella System with an average train payload of 10,000 tonnes. The Western System to the Port of Brisbane carries the smallest amount of coal per annum, but passes through the most urbanised area. In 2010-2011, Aurizon estimated that 9 trains per day travelled on the Western System with an average train payload of 1,925 tonnes.

4. DEFINITIONS

Particulate matter is a term used to define solid or liquid particles that may be suspended in the atmosphere. Particulate matter is a generic term that is commonly used interchangeably with other terms such as smoke, soot, haze and dust (which includes coal dust). The potential effect of particulate matter on the environment, human health and amenity depends on the size of the particles, the concentration of particulate matter in the atmosphere and the rate of deposition.

Concentration is the mass of particulate matter that is suspended per unit volume of air. Suspended particulate matter in ambient air is usually measured in micrograms per cubic metre (µg/m³).

Deposition is the mass of particulate matter that settles per unit surface area. Deposited particulate matter is usually measured as the mass in grams that accumulates per square metre (g/m^2) over a 1 month period.

Particulate matter with an aerodynamic diameter greater than 10micrometres (µm) tend to be associated with amenity impacts, while particulate matter less than 10 µm are associated with health impacts. For this reason, particulate matter is sub-divided into a number of metrics based on particle size. These metrics are total suspended particulates (TSP), PM_{10}, $PM_{2.5}$ and dust deposition rate.

The atmospheric lifetime of particulate matter, that is how long the particle is airborne, depends on the size of the particle with coarse particulate matter tending to deposit quickly and in relatively close proximity to its point of emission, whilst fine particulate matter may remain suspended in the atmosphere for many days and travel many hundreds of kilometres. It should be noted that, whilst smaller particles have longer atmospheric lifetimes, they also disperse as they travel. Dispersion will quickly reduce the overall concentration of particles.

Further information on the technical definitions relating to dust we refer you to page 17 of the Katestone report.

5. IS THERE EVIDENCE THAT COAL DUST IS EMITTED FROM COAL TRAINS IN TRANSIT?

There is both theoretical and observational data that provides evidence that coal dust may be emitted from coal trains in transit. Coal is a naturally occurring geological material that can become dusty if it is crushed and dried. Dust complaints were received by QR Limited over a number of years in relation to coal trains in central Queensland. Occasionally complaints cited visible dust emissions from coal trains.

6. THE SOURCES OF COAL DUST EMISSIONS FROM COAL TRAINS AND THE FACTORS THAT INFLUENCE THEM

The coal industry readily accepts that coal dust can be emitted from the following activities and sources on a typical coal rail system:

- Erosion of the coal surface of loaded wagons (primarily during transit)
- Coal leakage from doors of loaded wagons
- Wind erosion of spilled coal in the rail corridor
- Residual coal in unloaded wagons and leakage of residual coal from doors
- Parasitic load on sills, shear plates and bogies of wagons

The amount and rate of coal dust emitted from coal trains is variable and is dependent upon the following factors:

- Surface area of coal exposed to air currents
- Coal properties - dustiness
- Train speed
- Train vibration
- Transport distance and route characteristics
- Load characteristics, such as the shape or profile of load
- Amount of precipitation
- The extent and effectiveness of dust controls

QRC particularly draws the Committee's attention to the aspect of profiling which refers to the shape of the exposed surface area above the sill of a coal wagon. Works undertaken in Queensland (e.g. McGilvray, 2006) indicate that coal loads in wagons that are shaped in an irregular way, such as with multiple peaks, can produce more dust than a flat 'garden bed' shape. Poorly loaded wagons can also spill coal onto the ballast and within the corridor.

The irregularly shaped load has a greater erodible surface area and is subject to greater air speeds than the 'garden bed' shape. Wind tunnel modelling has shown that the three mound case (representing the irregularly shaped load) exhibits slightly higher velocities and turbulence intensities than the 'garden bed' configuration (Connell Wagner, 2008).

The effect of the greater turbulence intensities and air speeds across the coal surface will increase the dust emission rate from each irregularly shaped wagon.

Experience in central Queensland suggests that wagons with an uneven or undulating load profile and wagons that are overloaded can be an important cause of dust emissions and coal deposition within and potentially beyond the rail corridor. Deposition of coal into the ballast that supports the tracks can damage the track foundation. Fortunately, a range of actions can be readily implemented to reduce

coal loss in transit by improving the load profile to a flat "garden bed" shape. These approaches are being progressively implemented at mines in central Queensland and will also be undertaken for the trains that travel through Brisbane.

7. WHAT ARE THE POTENTIAL EFFECTS OF COAL DUST ON THE COMMUNITY?

Contrary to what members of the Committee may have been told, there is no specific information that links health effects with dust emitted from trains carrying coal.

Generically, dust or particulate matter can have a variety of health and amenity effects depending on the concentration, the size of particles and the exposure time and studies have linked increases in hospital admissions to elevated particulate matter exposure. Health effects associated with exposure to elevated levels of particulate matter include: coughing, sneezing, wheezing and increased breathlessness.

This is to be distinguished from potential amenity effects of elevated dust levels, which include short term reduction in visibility, build up of particulate matter on homes and soiling of washing.

As mentioned above, there is a demonstrated statistical association between health effects and the concentration of fine particulate matter, However recent studies by Ono (Ono, 2007), Cowherd and Donaldson (Coward & Donaldson, 2005) and USEPA (USEPA, 2006) indicate that in susceptible sub-populations, fine particulate matter from combustion related sources are markedly more detrimental to health than coarse particulate fractions ($PM_{10-2.5}$). There is data associating PM_{10} from a combustion origin with health effects but this fraction also contains $PM_{2.5}$ (Drew, 2009) and, hence, the specific cause cannot be delineated.

The Committee needs to understand that there is clearly a fundamental distinction between particulate matter originating from the combustion of fuel and secondary chemical reactions, and mechanically generated crustal particulate matter i.e. coal dust from trains. Where the former is generated for example by motor vehicles and power stations and consists predominantly of fine particulate matter ($PM_{2.5}$), the latter originates from earthworks and mining (including coal dust emissions from rail transit) and consists predominantly of coarse particulate matter (PM_{10}).

As such, QRC notes that there has been substantial focus on the alleged health impacts of coal dust, and yet there is clearly significant scientific literature that affirms that fine particulate matter from combustion related sources (e.g. diesel particulate matter) is far more detrimental to human health. Furthermore, it is worth noting that the Queensland coal industry has not had a case of black lung in over twenty years. This is notable in contrast to developed countries such as the United States of America, which persistently have well over 2000 cases of black lung reported annually.[1]

Recognised as having some of the best regulation in the world to protect workers health, along with one of the best records of compliance and leading practice within industry, the Queensland coal industry is serious about continuing to protect workers from this insidious disease. For example, under Section 46 of the Coal Mining Safety and Health Regulation (Qld) 2001 it is mandatory for all coal

[1] Malignant Mesothelioma: Mortality, NIOSH Home The National Institute for Occupational Safety and Health (NIOSH) Available at http://www2a.cdc.gov/drds/WorldReportData/FigureTableDetails.asp?FigureTableID=2572&GroupRefNumber=F07-01

mine workers to undergo health assessment. The legislation requires that these assessments occur periodically but at least every five years. The assessments must be conducted by or under the supervision of a nominated medical adviser (NMA) who has been appointed by the employer of the coal mine worker.

8. CURRENT AIR QUALITY REGUALTORY FRAMEWORK

Also contrary to what the Committee may understand to be the case, there is already an extensive regulatory framework for the management of dust in Queensland, which includes but is not limited to:

- *Environmental Protection Act 1994 (Qld)*
- *Environmental Protection (Air) Policy (Qld)*
- Specific conditioning placed in an Environmental Authority under the power of the *Environmental Protection Act 1994 (Qld)*

The *Environmental Protection Act 1994 (Qld)* (EP Act) provides for the management of the air environment in Queensland. The legislation applies to government, industry and individuals and provides a mechanism for the delegation of responsibility to other government departments and local government and provides all government departments with a mechanism to incorporate environmental factors into decision-making.

The EP Act gives the Department of Environment and Heritage Protection (DEHP) the power to create Environmental Protection Policies that identify, and aim to protect, environmental values of the atmosphere that are conducive to the health and well-being of humans and biological integrity. *The Environmental Protection (Air) Policy* (Air EPP) was made under the EP Act and gazetted in 1997; the Air EPP was revised and reissued in 2008.

The objective of the Air EPP is *'to identify the environmental values of the air environment to be enhanced or protected and to achieve the objective of the Environmental Protection Act 1994, i.e. ecologically sustainable development.'*

The environmental values to be enhanced or protected under the Air EPP are the qualities of the environment that are conducive to:

- protecting health and biodiversity of ecosystems
- human health and wellbeing
- protecting the aesthetics of the environment, including the appearance of building structures and other property
- protecting agricultural use of the environment

Schedule 1 of the Air EPP specifies air quality indicators and objectives for Queensland for approximately 93 contaminants that may be present in the air environment.

The Air EPP air quality objectives relevant to the air pollutants that may be generated from coal trains i.e. particulate matter, are presented in page 21 of the Katestone report. Other contaminants that may be contained in the coal, such as metals, are at low levels and are unlikely to cause adverse impacts on air quality.

For further information on the specifics of the Air EPP, please refer to page 21 of the Katestone Report.

It is worth noting that dust nuisance can occur due to the deposition of larger dust particles. Elevated dust deposition rates can cause reduced public amenity, as an example through soiling of clothes, building surfaces and other surfaces. Table 5 of the Katestone report also shows the dust deposition guideline commonly used in Queensland as a benchmark for avoiding amenity impacts due to dust. The dust deposition guideline is not defined in the Air EPP and is therefore not enforceable by legislation, but is commonly recommended by DEHP as a design objective and is commonly applied in approval conditions, including through the recently developed model conditions for Environmental Authorities, thus effectively ensuring compliance.

9. QUANTIFICATION OF IMPACTS OF COAL DUST

Central Queensland Environmental Evaluation

As part of the QR Environmental Evaluation (Connell Hatch, 2008), emissions of coal dust from coal trains were estimated and resultant environmental impacts determined, through a combination of a literature review, dispersion modelling and air quality monitoring. The study looked at existing estimates of coal dust emission rates as well as other dust sources to estimate emissions from the Goonyella, Blackwater and Moura lines under a number of different scenarios. Impacts of coal dust from coal trains on the environment were investigated through an ambient monitoring study of total suspended particles as well as by looking at a number of prior monitoring studies conducted in Queensland.

The results of each of the studies were assessed against air quality goals for human health. The following observations can be made about the results of this assessment:

- Although the Air EPP PM_{10} goal was 150µg/m³ at the time of the study, comparisons were also made against the Air NEPM standard of 50µg/m³ (24-hour average), equivalent to the current Air EPP objective
- Exceedances of the Air NEPM standard at the monitoring locations were very rare and not likely to be caused by coal trains
- In cases where an exceedance was recorded, the contribution of coal dust was found to be minor
- The studies did not find the potential for health impacts inside or outside of the rail corridor as assessed against current air quality objectives due to coal dust emissions from trains. The studies did not find the potential for amenity impacts outside the rail corridor due to coal dust emissions from trains when assessed against current air quality guidelines for nuisance.

The results of each of the studies were also assessed against the air quality guideline for amenity and the following conclusions were drawn:

- At 3 metres or 5 metres from the tracks, deposition rates were likely to be above the nuisance threshold of 120mg/m²/day however at 10 metres from the tracks the deposition rate dropped well below the threshold
- The coal content of deposited dust samples was determined by laboratory analysis as part of the 2007 Callemondah study by Simtars. At 10 metres from the track, coal was shown to make up between 35 and 75 percent of deposited dust.

Dispersion modelling was conducted based on emission rates calculated as described above. The results showed the predicted concentrations of dust fall sharply with distance from the rail line. No exceedances of air quality objectives were predicted to occur outside of the rail corridor (10 metres from the tracks), including at sensitive receptors, based on the rail activities at the time (2006-07).

The literature review and monitoring program conducted as part of the Environmental Evaluation identified the rail corridor as being approximately less than 10 metres from the rail line. Both the literature review and monitoring indicated that outside of the rail corridor the likelihood of coal dust from coal trains impacting on the environment was low.

Although atypical, observations and photographs taken during the QR Environmental Evaluation showed that visible dust was emitted by some coal trains operating in Queensland and that dust was observed to travel beyond the rail corridor. It was also found that at the time many Queensland mines did not practice load profiling and did not apply water or chemical surface veneer treatments to the surface of coal wagons. Such occurrences suggested that, for some Queensland trains coal dust emissions were not effectively controlled to prevent nuisance concerns.

Queensland Government Tennyson Study

In 2012 the Department of Science, Information Technology, Innovation and the Arts (DSITIA) conducted a one-month study of dust in the Brisbane suburb of Tennyson in response to community concern over dust from coal trains. The Brisbane Metropolitan Rail System was used to transport approximately 9 million tonnes of coal to the port of Brisbane in 2012 from mines in the Clarence-Moreton and Surat coal measures (Western System). The coal trains pass through the suburb of Tennyson.

The Tennyson dust monitoring investigation involved three sites and a number of different pieces of dust monitoring equipment, summarised below.

Sites and equipment used in the Tennyson dust monitoring investigation

Site	Location	Equipment	Description
Tennyson Station	6 metres from the northern track	Low-volume sampler (Partisol 2025)	24-hour average measurements of PM_{10}, for comparison to Air EPP
		Dust deposition gauge	1-month average dust deposition rate, proportion of coal in deposited dust
		Aerosol monitor (Dusttrak 8533)	5-minute average particle measurements, not for comparison to Air EPP
Myla Terrace	Residential street, 20 metres from the northern track	Dust deposition gauge	1-month average dust deposition rate, proportion of coal in deposited dust
Vivian Street	Residential street, 300 meters from the rail line	Dust deposition gauge	1-month average dust deposition rate, proportion of coal in deposited dust

The following limitations of the monitoring campaign should be noted, as identified within the study report:

- The monitoring program lasted a single month, therefore only a single data point was available for the assessment of dust deposition rates at each site
- While the exact distribution of trains on either track was not reported, full coal trains predominantly used the northern track while empty coal trains predominantly used the southern track. This is unlikely to have an effect on results at Myla Terrace or Vivian Street monitoring sites; however, the Tennyson Station monitoring equipment was located approximately 6 metres from the nearest (northern) track, and approximately 9 metres from the farther (southern) track. This placement may have an influence on the results.

The study compared the measured values of 24-hour average PM_{10} concentrations to the Air EPP objective of 50µg/m³ and dust deposition rates to the New Zealand Ministry for the Environment's recommended trigger level for dust nuisance of 130mg/m²/day. No exceedance of either criterion was identified at any of the sites during the monitoring program.

Further analysis of samples indicated that the major component of the deposited dust at each site was mineral dust, ranging between 40 and 50 percent. Coal was found to be between 10 and 20 percent of deposited dust in the samples. Another black coloured particle, rubber dust, was found as levels of 10 percent at all three monitoring sites. Rubber dust is generated from tyre action of vehicles.

So while coal dust from trains was found to be a measurable source of dust in the Tennyson area; it was not the major source of dust and air quality objectives were not exceeded during the month long study.

More detailed information on the Tennyson dust monitoring investigation can be found at page 32 of the Katestone Report.

In summary, a review of studies that have conducted air quality monitoring in the corridor and around rail systems has shown that whilst coal dust and the influence of coal trains on dust levels has been detected, the levels of coal dust were found to be well below the air quality objectives for the protection of human health and amenity impacts.

The studies show that outside of the rail corridor, defined as approximately 10 metres from the tracks, coal dust concentrations were much lower than within the corridor and were below air quality objectives for the protection of human health and amenity.

10. MANAGEMENT OF DUST EMISSIONS

Working with the environmental regulator, mining companies and the rail operator in Central Queensland (Aurizon) are implementing a program to ensure that coal dust emissions from coal trains are adequately managed. Following an extensive study of the issue and a cost benefit analysis of potential solutions, the Coal Dust Management Plan (CDMP)[2] for Central Queensland was released by Aurizon in February 2010 and approved by the Department of Environmental and Heritage Protection (DEHP). The CDMP covers coal dust from trains in the Central Queensland Goonyella,

[2] http://www.aurizon.com.au/InfrastructureProjects/Rail%20Network/Coal_Dust_Management_Plan.pdf

Blackwater and Moura rail systems connecting to the Ports of Gladstone and Hay Point. The initial working group convened as part of the CDMP consultation process included:

- coal producers represented by QRC
- coal train operators (Aurizon and Pacific National)
- rail network managers
- Capricornia Domestic and Export Coal Terminals, and
- Goonyella Export Coal Terminals.

The first phase of implementation targeted the dustier coal mines. Spraying stations to veneer coal before leaving the mines were installed at the top 14 priority loading facilities by the end of 2012.

All 36 loading facilities under the CDMP are required to have veneer spray stations in place by end 2013.

In addition, four permanent opacity monitoring units (one each on the Blackwater, Goonyella, Moura and Newlands systems) to track dust from coal trains as well as to confirm the effectiveness of veneering were installed. Aurizon has the obligation to report opacity readings of above 5 percent to DEHP.

Results to date indicate a reduction in coal dust from trains by up to 90 percent through veneering.

The following table details the full suite of Actions being implemented across the Central Queensland coal supply chain.

Timeframe	***Actions for Central Queensland Coal Supply Chain***
Current 2010-2013	*Development of effective dust suppression (veneering) strategy*
	Train speed indicators
	Sill brushes to remove parasitic load
	Profile design of chute loaders to improve load profiling
	Effective loading procedure to avoid overloading
	Community liaison
	Procedural review and operational training to avoid overloading and improve load profiling
	Coal dust removal (ballast cleaning)
	Coal dust monitoring systems
	Modify existing unloading facilities to avoid coal remaining in wagons and potential spillage associated with carry-back
	Wheel washing
	Implementation of effective dust suppression (veneering) strategy
Short-Medium Term (3-5 years)	*Ballast spoil management*
	Wagon loading practices and wagon design to avoid overloading and improve load profiling
	Load-out facility infrastructure to avoid overloading and improve load profiling
	Coal moisture regulating system
	Internal communications

	Wagon vibrators to avoid coal remaining in wagons and potential spillage associated with carry-back
	Coal type testing for dustiness

A comprehensive coal dust management approach is also being considered in other parts of Queensland with the initial step being the commencement of a *Western - Metropolitan Rail Systems Coal Dust Monitoring Program*

The broader objectives of this study are:

- To undertake a Dust Monitoring Program on the Western and Metropolitan Rail Systems to evaluate the impact of coal dust from trains.
- Assess both the health risk and nuisance impacts of dust on communities adjacent to these rail systems, and to determine the percentage contribution of coal dust particles to overall dust levels.
- Assess the impact of coal wagon dust mitigation measures on dust levels in communities adjacent to the rail systems.
- Establish a long-term (12 months) monitoring site to measure and report on seasonal trends in coal dust emissions and the progress of measures to reduce coal dust emissions.

In more detail, the ambient air quality monitoring program for particles will be conducted using two monitoring regimes:

1) **Campaign monitoring** at six locations across the Western and Metropolitan Rail System (and one background location) for two separate one-month sampling periods – one month prior to implementation of coal wagon veneering at New Hope Coal's New Acland Mine (accounting for around 60 percent of tonnage on the rail system) and one month following full implementation of veneering at the New Acland Mine – to assess the impact of this dust mitigation measure on dust levels adjacent to the rail corridor; and

2) **Continuous monitoring** at one location for a 12 month period to assess seasonal changes in dust levels and to measure and report on the progress of measures to reduce coal dust emissions. Monitoring of particles will be undertaken using sampling equipment and methodologies that are in accordance with this project brief. The sampling equipment will be operated in accordance with the relevant Australian Standard or Ambient Air Quality NEPM protocol.

Objectives of the ambient air quality monitoring program are to:

- Undertake dust monitoring at sites along the track which are representative of dust exposure levels at or near key population areas.
- Quantify the exposure to particles that pose a health risk and/or nuisance that the community experiences near the edge of the rail corridor.
- Quantify, to the extent possible given different seasonal sampling conditions, the impact of coal wagon dust mitigation measures on dust levels in the community.
- Report on the air quality monitoring results and provide an assessment of likely environmental impacts and health risks from current dust exposures.

See Appendix C for the full detail on this monitoring program.

As noted at the beginning of this submission, QRC will be more than happy to provide the Senate Inquiry with the results of the monitoring program as they come to hand.

11. SPECIFIC ASPECTS OF COAL DUST MANAGEMENT MEASURES

Veneering

The Central Queensland coal supply chain concluded that a garden-bed profile and veneered coal wagons would be the favourable mitigation methods to achieve the greatest result in reducing dust emissions.

Veneering is an application of a biodegradable polymer onto the surface of the loaded coal. The applied product has no adverse human or environmental impacts. The veneer forms a skin over the coal load and wind tunnel studies suggest that a reduction in coal dust lift-off of better than 85% is achievable.

Consideration of wagon lids

There have been many claims in the media about the efficacy of the use of wagon lids, however in its work on the Queensland Rail Environmental Evaluation, Connell Hatch conducted an analysis of the feasibility, practicability and cost-effectiveness of either retrofitting wagon lids to the existing fleet or redesigning wagons to incorporate a lid across the Central Queensland coal network.

Connell Hatch reported that wagon lids are used in the transport of some materials in northern Queensland and in the transport of coal in North America where very cold conditions, snow and ice can adversely affect the coal.

While Connell Hatch found that wagon lids are likely to substantially reduce coal dust emissions from wagons, it was acknowledged that there were many potential adverse operational impacts and costs associated with implementing wagon lids that cannot be estimated without a thorough detailed investigation. The major disadvantages of introducing wagon lids include:

- Large operating cost (retrofitting only)
- Modifications to all loading and unloading facilities
- Ramifications of lid failure

The preliminary work presented in the environmental evaluation suggests that wagon lids are unlikely to be a feasible solution in the short term.

For further information see the full Connell Hatch analysis of the cost/benefit of using lids on coal wagons at Appendix B.

12. CONCLUSION

QRC strongly recommends that the Committee considers the scientific facts relating to the impact of dust from coal trains, rather than succumbing to hyperbole.

We have tried to show in this submission that there are in fact no demonstrated health effects that can be attributed to dust from coal trains, and that even the issue of nuisance is restricted to a very narrow corridor of influence.

However, notwithstanding this, the industry accepts the public concern with coal dust emissions from trains and is taking decisive, leading practice, action to understand the sources and impacts of coal dust through extensive monitoring programs, as well as undertaking specific dust mitigation activities such as veneering and profiling.

13. FURTHER INFORMATION

QRC would be very happy to discuss the contents of this submission with the Inquiry, and can also arrange a meeting with our members for the Committee.

The QRC contacts on QRC's dust management work are

- Dr Petra Behrens, Economic Policy Adviser
- Frances Hayter Director Environment Policy