Senate Committee Inquiry into the Impacts of Air Quality on Health – Reed – March 2013

Appendix B

Drake Coal Project EIS – June 2012, Draft Supplementary EIS – November 2012 and Supplementary EIS – March 2013.

EIS Sub.

Volume 1 - Chapter 4

4.2.5 Wind

Hourly meteorological monitoring is available from the Sonoma Coal Mine located approximately 6 km north of the Project site. For the 2008/2009 period, hourly meteorological data from the on-site Sonoma Automatic Weather Station (AWS) was used to develop a meteorological file covering a full 12 month period. This data included raw data on temperature, wind speed and direction and sigma-theta (standard deviation of wind direction).

Figure 4-2 (see proponent doc) *shows the average annual wind rose for the period 1 June 2008 through 31 May 2009. The annual average wind speed was 2.35 m/s over this period. Wind originated predominately from the northeast to south-southeast quadrant (74% of all wind), with a low occurrence from the south (6% of wind) and north (5% of wind).*

The wind data used here is only covering one year and may not represent the longer term pattern.

DSEIS:

2.3.2.2 Climate

Comment GR 3
The wind data used here is only covering one year and may not represent the longer term pattern.

Response
The key requirements for the meteorological data are that it contains hourly data covering a period of at least one year and that it has a good spread of seasonal variations and that they are representative of meteorological conditions in the area (See for example, Victorian State environment protection policy (Air Quality Management), Schedule C, Part B 2(a)).
The modelling methodology uses all possible combinations of real (i.e. locally measured) meteorological conditions throughout a full year to assess the worst-case conditions.

DSEIS:

Comment GR 5
These results are of great concern because of the presence on the site of residual voids liable to overflow and spoil heaps that may be unstable over time.

Response
Refer to comment MCG 4.

Comment MCG 4
Drake Coal will ship its coal out through Abbot Point from 6,000+ tonne stockpiles stored onsite next to a nationally listed wetland and the Great Barrier Reef World Heritage Area. They will present a fine coal dust pollution hazard to these wetlands and the Reef. Why can't they be stored inland with coal brought to the coast in just the amount needed for shipping? Why is coal being stockpiles in a natural hazards area where no modelling of the likely event of a flood combined with storm surge has been done? What

is the risk level of such an event sending this stockpiled coal into the wetlands and adjoining reef waters?
The Drake Coal Mine plans to leave many residual voids after it finishes mining. They are unsuitable for beneficial water uses (not designed for easy access for cattle and their waters are usually polluted). In Collinsville wildlife frequently falls into these voids and drown or are injured in these highly acidic waters which also contain toxic heavy metals.
During Wet Seasons these residual voids are likely to overflow and pollute nearby waterways. They also present a contaminated groundwater risks. Why aren't these voids to be filled and the affected areas relandscaped?
Is it just a matter of cost cutting or are there other reasons? It certainly does not meet Sustainable Development standards.

Response
One migratory and 14 marine bird species were observed during the 2010 and 2012 surveys of the Project area combined (Volume 2 Appendix N - Appendix E). These species included the whistling kite

(*Haliastur sphenurus*), black-faced cuckoo-shrike (*Coracina novaehollandiae*), nankeen kestrel (*Falco*

cenchroides), sacred kingfisher (*Todiramphus sanctus*), rainbow bee-eater (*Merops ornatus*), Richard's area from time to time, there is no evidence in 1) Important Bird Areas (IBA) of Qld or 2) documents concerning the East Asian-Australasian (EAA) Flyway that this part of central Qld has important sites for migratory or other bird species.
The impacts upon the migratory and marine bird species from the Project is not expected to be significant as the species observed are mostly 'fly-over' species that would use the Project area sporadically during migration movements. The marine and migratory species recorded during the field surveys (2020 and 2012) were all common, abundant and widely distributed throughout the woodlands of the Project area and the woodlands of north-central Queensland.
Potential habitat for some of these species may exist in the Project area, particularly during the wet season, however the Project area is unlikely to provide core habitat for feeding, breeding or roosting. There is minimal evidence to suggest that the Project area supports an important population or area of these migratory species. Given their migratory habitats, the ephemeral nature of streams in the area and the extent of similar and comparable habitat through the range of these species, it is unlikely the Project will result in a significant impact on any migratory species.
A number of sediment basins will be created as part of the Project. Although artificial waterbodies cannot completely replace the functions of natural ones as waterbird habitats, it is recognised that artificial waterbodies can provide alternative or complementary habitats for waterbirds in all life stages and consequently, can partially mitigate the adverse influences of loss and/or potential impact on habitat. With the continuous loss of natural wetlands globally, artificial waterbodies may become increasingly important as habitats for waterbirds (Czech and Parsons 2002).
Where remediation can achieve suitable water quality, pit lakes may become a valuable asset to both human and ecological communities (Zhao et al., 2009, McCullough & Lund, 2006). Further information on the potential benefits and risks associated with mine pit lakes can be found in the Mine Voids Management Strategy for the Collie Basin which outlines the potential benefits and risks associated with Collie pit lakes (Zhao et al., 2010, Zhao et al., 2009, McCullough and Lund 2010, Hinwood et al., 2010, Muller et al., 2010). Figure 2-15 and Figure 2-16 show the potential benefits and risks of pit lakes to communities and the environment.
Refer to WRC 8 for information on mitigation measures regarding discharge to surface waters.

SEIS Comment. I am sorry but this is ridiculous and deserves a lot more comment than I have the time for. I hope others have commented on it.

(IT seems there has been a typo in the proponents material, I have been unable to clarity that for the submission)

EIS Submission.
Impacts on Adjacent Land Uses
An assessment of dust impacts has been undertaken. The assessment found that, the Project is predicted to comply with all relevant EPP (Air)/NEPM (air) air quality objectives and goals at all identified sensitive receptors for the construction and operations over the 26 year life of the mine.
No sensitive receptors will be impacted due to their location being north and south of the Project site. As predominant winds are easterly trades with smaller amounts of northerlies and southerlies, poorest dispersion will be towards the west of the site away from all sensitive receptors.

I have concerns that there are inadequacies in the assessment of the dust impacts as mentioned at 4.2.5 Wind and below at 11.5 Dust Emissions.

DSEIS:
Comment GR 10
Impacts on Adjacent Land Uses:

Response
Refer to comment DEHP 10 and 11.

2.1.7.7 Air Quality
Comment DEHP 10
The potential for dust to cause nuisance at sensitive receptors was not identified as an air quality impact and an assessment of the potential for the project to cause dust nuisance at sensitive receptors could not be found.
The project has the potential to generate levels of dust that could result in nuisance to sensitive receptors. EHP recommends that dust deposition rates at sensitive receptors should not exceed 120 milligrams per square metre on a monthly basis, when measured in accordance with Australian/New Zealand Standard AS/NZS 3580.10.1:2003, 'Methods for sampling and analysis of ambient air. Method 10.1: Determination of particulate matter- Deposited matter- Gravimetric method'.
Recommendation
Include the EHP nuisance dust air quality criterion in Appendix K- Section 2.4.2, and assess the potential for nuisance dust fall deposition to exceed the EHP recommended criterion at sensitive receptors. Appendix K, Section 4, Air modelling dispersion (Page 20).
Response
AS/NZS 3580.10.1:2003 clearly sets the measurement unit as grams per square metre per month (time period) where month is defined as 30 +/- 2 days. This partially explains why there is no dust deposition air quality objective in the Queensland Environmental Protection (Air) Policy 2008 (EPP (Air)). In the instance of the air policy, the only dust indicators (Total Suspended Particulates (TSP), PM_{10} and $PM_{2.5}$) are concerned with 'health and wellbeing'. Additionally, as stated in the Townsville Dust Monitoring Program: March 2008 to December 2009 (Air Quality Sciences, Department of Environment and Resource Management, March 2010, p.40):
"There is currently no EPP (Air) air quality objective for deposited matter. The New Zealand Ministry for the Environment recommends that dust deposition (insoluble solids fraction) should be below 4 g/m2 over a 30 day averaging period (equivalent to an average daily deposition rate of 13 0 mg/m2) to minimise nuisance complaints."
The 4 g/m2/month criterion matches the long-standing New South Wales (NSW) deposited dust criterion, which is clearly related to an annual average, and the more recent adoption of the same 'indictor of effectiveness of monitoring controls', used as a monthly trigger, in the Victorian Protocol of Environmental Management for Mining and Extractive Industries (EPA Victoria, Pub 1191, December 2007).
The Air Policy as discussed in Section 2.4.2, and indeed section 2.4.1 of the EIS Report, relate to the Environmental Values of any particular indictor such as dust. The report made clear that the Policy applies to "an area or place" that is off-site to the workplace (that generated the emission), taking this as the boundary. If the Policy level is achieved here it is therefore achieved at sensitive places. This was further documented in the assessment section of the EIS Report.
It is also commonly found in assessing open-pit coal mining operations that the 'health and well-being' impact (essentially PM_{10}) extends further than the nuisance dust impact.
However, for completeness, and despite dust fallout not being in the Air Policy, modelling has been repeated to assess the quantum of dust deposition at the identified sensitive receptor locations (see figure 2 of Appendix K of the EIS Report). The modelling uses the reproduced pattern of dispersion as in the technical report (PM_{10}) but with annualised dust deposition at the discrete receptors.
To place in context, ambient, or background (natural) dust fallout can be established from existing monitoring remote from the impact of existing mining operations. In the context of the background dust deposition rate, 40 to 65 Milligram per Square Meter per Day (mg/m2/day) can be assumed as a background range of measured values of 56±33 to 48±33. The latter values are established from monitoring data giving the average and standard deviation of measured dust deposition at Belmore Homestead and a location on Coral Creek further to the south-east, respectively.
As such, modelled impact from mine to the identified sensitive receptors is no more than 1% of 'natural' dust fallout, as shown in Table 2-2, below.
Table 2-2 Modelled annual average deposition at receptors

1 Belmore Homestead 0.06
2 Havilah Homestead 0.08
3 Havilah Homestead Shed 0.07
4 Sonoma Homestead 0.23
5 Residential Dwelling 1 0.48

6 Residential Dwelling 2 0.44
7 Residential Dwelling 3 0.42
8 Residential Dwelling 4 0.39
9 Residential Dwelling 5 0.33
10 Residential Dwelling 6 0.27

Comment DEHP 11
Meteorological data is one of the critical inputs to air dispersion models, and must be prepared in accordance with recognized and accepted procedures. There are specific procedures for preparing AUSPLUME meteorological data files (metfiles). However, a description of how the input AUSPLUME metfile was prepared for the EIS could not be found.
Recommendation
Describe the preparation of the AUSPLUME metfile. As a minimum, the metfile should be prepared in accordance with EPA Victoria's 11 Construction of input meteorological data files for AUSPLUME11 (Publication 1459, April 2012) or an equivalent (described) method. Appendix K, Section 5 Results and implications (Page 31), and Section 6 Discussion and mitigation (Page 36)
Response
The meteorological dataset consisted of 10-minute averaged raw data measured at Sonoma operations from 30 January 2008 to 12 June 2009 (i.e. 6 readings per hour for 16.5 months) with measurements of:
- Wind speed;
- Wind direction;
- Standard deviation of wind direction;
- Dry bulb temperature;
- Relative humidity;
- Solar radiation; and
- Rainfall (tipping bucket).

As part of the rigorous methodology to convert these data into hourly averaged data suitable for the Ausplume modelling, a meteorologist conducted Quality Assurance procedures to the data. Part of this involved selecting a full annual cycle with 100% data coverage so that there were no missing days in the yearly file used. Radiation shielding was used for the temperature measurements and the wind vane and cups were atop a 10 m mast. Hourly averaged data were calculated using USEPA recommended guidance. Derived stability was calculated using the approved methodology (Modified sigma-theta method) from the USEPA. Mixing heights, which are not important for ground based dust dispersion, where calculated using NSW Approved Methods for determination of mechanical mixing heights (the conservative adjustment for convective mixing increasing mixing height under some conditions was not used). Since sigma-theta data were available, these hourly averaged values (with recommended RMS averaging) were included in the Ausplume file.

SEIS:
Comment GR 30
My question at GR10 responded to at EHP 10-11 has not satisfied me and does not explain why Collinsville has experienced a dramatic increase in dust since the operation of Sonoma Mine began.
Response
This submission is new material that was received after the submission period ended.
Refer to the Air Quality Assessment (Appendix K of the EIS) for details on dust impacts and mitigation.

EIS Sub.
11.5 Dust Emissions
11.5.2 Mining Operational Dust
Also note that $PM_{2.5}$ emissions are not calculated from the NPI Emission Estimate Technique Manuals for Mining directly but instead were calculated from different particle size distribution ratios for the two types of dust, namely overburden (sourced from specific samples[4] (Cresswell, 2008), and coal (NPI 2001)).

Table 11-5 Estimated Annual Dust Emission Rates for the Project with Standard Mitigation

Scenario 1- Year 3-5 TSP-307; PM10- 636; PM2.5-1,858 *tonnes/year*

Unless I have missed something (or there is a typo in the EIS document) the PM2.5 estimated dust emission rates are 3 times that of PM10 which is the only particle size modelled. As PM2.5 would be lighter they would be expected to travel further by wind and it is also known that PM2.5 particles are more hazardous.
The following discussion is confusing and given the possible inadequacy in the wind direction rose from Sonoma mine mentioned at 4.2.5, I am left with more questions than answers about dust emissions from the Drake mine site.

DSEIS:
2.3.2.8 Air Quality
Comment GR 22
Also note that $PM_{2.5}$ emissions are not calculated from the NPI Emission Estimate Technique Manuals for Mining directly but instead were calculated from different particle size distribution ratios for the two types of dust, namely overburden (sourced from specific samples 4 (Cresswelf, 2008), and coal (NPI 200)).
Table 11-5 Estimated Annual Dust Emission Rates for the Project with Standard Mitigation
Scenario 1- Year 3-5 TSP-307; PM_{10}- 636; PM2.5-1,858 tonnes/year
Unless I have missed something the $PM_{2.5}$ estimated dust emission rates are 3 times that of PM_{10} which is the only particle size modelled. As $PM_{2.5}$ would be lighter they would be expected to travel further by wind and it is also known that $PM_{2.5}$ particles are more hazardous.
The following discussion is confusing and given the possible inadequacy in the wind direction rose from Sonoma mine mentioned at 4.2.5, I am left with more questions than answers about dust emissions from the Drake mine site.
Response
Refer to comment MCG 34.

2.2.1.10 Air Quality
Comment MCG 34
Also note that PM2.6 emissions are not calculated from the NPI Emission Estimate Technique Manuals for Mining directly but instead were calculated from different particle size distribution ratios for the two types of dust, namely overburden (sourced from specific samples 4 (Cresswell, 2008), and coal (NPI 2001)).
Table 11-5 Estimated Annual Dust Emission Rates for the Project with Standard Mitigation
Scenario 1- Year 3-5 TSP-307; PM_{10}- 636; $PM_{2.5}$ -1,858 tonnes/year Unless I have missed something the $PM_{2.5}$ estimated dust emission rates are 3 times that of PM_{10} which is the only particle size modelled. As $PM_{2.5}$ would be lighter they would be expected to travel further by wind and it is also known that $PM_{2.5}$ particles are more hazardous.
The following discussion is confusing and given the possible inadequacy in the wind direction rose from Sonoma mine mentioned at 4.2.5, I am left with more questions than answers about dust emissions from the Drake mine site.
11.11 Discussion on High Level Mitigation Results
Application of the high level mitigation measures are expected to reduce dust emissions by 40% and will result in compliance to the EPP (Air)/NEPM (Air) objectives/goals. The Project is predicted to comply with the assessment criteria EPP (Air)/NEPM (Air) objectives/goals tor PM to at the' public-restricted Project boundary, for preparation and operations over the 26 year life of the mine with the addition of high level mitigation. As the most problematic constituent PM_{10} is now compliant for both the preparation and operations over the 26 year life of the mine, it is then fair to assume that $PM_{2.5}$ and TSP would also be compliant at the site boundary with their appropriate criteria with the addition of high level mitigation. This prediction seems to defy common sense as I would expect $PM_{2.5}$ particles which are lighter I presume than PM_{10}, to travel further by wind. Appendix K
3.3.3 Particulate Matter- in-Air Concentration
There are no existing data available for the average concentrations of PM_{10} and $PM_{2.6}$ within the Sonoma project area. The PB assessment assumed a background PM_{10} concentration of 16.8 ug/m_3, based on the Mackay (1999) data provided by the EPA. Using a similar method/ to that use/ to calculate background dust deposition rates, a corrected background PM 10 concentration of 27.3 ug/m_3 was calculated and applied for this study. The adopted background $PM_{2.5}$; concentration is 12.3 ug/m_3 (Table 4). This value was derived based on the assumptions made by GHD for a similar projects involving field equipment where the ratio of PM_{10} to $PM_{2.5}$ was measured at 45%. The field work was for an air quality impact assessment for a quarry site with similar meteorological conditions for dry inland winds with a climate similar to the Collinsville area (i.e. temperatures above 25°C and humidity levels below 50%).

When there were northerly winds from inland Australia, during the dry part of the year; background levels of particulates were measured (these being upwind of the quarry source). In this way, a measure of the PM_{10} to $PM_{2.5}$ ratio was obtained for 'natural' summertime dry continental climatic conditions.

Response

$PM_{2.5}$ was modelled and assessed and found to have lesser impact than PM_{10}.

SEIS:

Comment GR 41

The serious questions that I have raised and the reference material I have presented here and also the comments and material presented by the Q-MCG 34 were not answered by the response: PM2.5 was modelled and assessed and found to have lesser impact than PM10. In fact the complete6[1] lack of response to the extremely serious issues raised about the effects of dust on the community and the resultant health implications and potential loss of life is derisory and could be seen as showing contempt for our community.

The Draft EA - MIN100942709 for Cows Coal Mine immediately to the south of Sonoma Coal Mine and to the north of the proposed Drake mine has called for PM2.5 monitoring. It should be understood by the proponent that the DERM and now the EHP require monitoring of PM2.5 on new coal mines. It shows bad faith and disrespect for the Collinsville community by QCoal Drake to attempt to roll back best practice environmental standards.

My research has found that 11 years ago, Australian governments resolved to adopt a standard for fine particle pollution (PM2.5). During that time the World Health Organisation has issued recommended guidelines and many developed nations have now adopted those standards.

Response

This submission is new material that was received after the submission period ended.

The Air Quality Assessment (Appendix K of the EIS) provides detailed information on impacts and mitigation measures associated with the Project. As described in this assessment, PM2.5 was modelled and assessed and found to have lesser impact than PM10. Dust monitoring will be in accordance with the environmental authority.

EIS Appendix K

8. Conclusions

Subject to the Limitations outlined in Section 9, GHD draws the following conclusions from this Air Quality Impact Assessment:

8.1 Standard Mitigation Measures

- The Project is predicted to comply with all relevant EPP (Air)/NEPM (Air) air quality objectives and goals at all identified sensitive receptors and at Collinsville for preparation and operations over the 26 year life of the mine;
- No sensitive receptors will be impacted due to their location being north and south of the Project site. As the predominant winds are easterly trades with smaller amounts of northerlies and southerlies, poorest dispersion will be towards the west of the site away from all sensitive receptors;
- The Project is conservatively predicted to result in exceedances of the assessment criteria of EPP (Air)/NEPM (Air) air quality objectives/goals for $PM_{2.5}$, PM_{10} and TSP at the public-restricted mining lease boundary, for preparation and operations over the 26 year life of the mine. This is primarily due to the assumed proximity of the works to the site boundary (without mitigation measures suggested in Section 6.2) and the estimated existing particulate levels which are relatively high in comparison to the air quality objectives/goals (27.3 ??g/m_3 of the 50 ??g/m_3 criterion);
- The progressive nature of coal mining will result in continual changes in mine and haul road locations throughout the Project lifespan, including progressive rehabilitation of disturbed areas. As such, the impacts associated with these sources, in combination with other fixed location sources will vary over the Project lifespan;
- Dust deposition rates are not anticipated to have a significant effect on native vegetation or pastures, and modelled coal dust deposition rates are well below those expected to reduce livestock productivity; and
- Given that there are no current residents in the regions of predicted off-site non-compliance (around the site boundary), the public health risk associated with predicted non-compliance would be low in comparison to the risk associated with comparable non-compliances at any area representative of the general population such as at Collinsville and the sensitive receptors.

If EPP (Air)/NEPM (Air) objectives/goals are to be met at the site boundary, targeted particulate emission

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mitigation measures will need to be considered. Audit monitoring can assess the effectiveness of these measures.
A well-structured Environmental Management System (EMS) typically includes some audit monitoring to indicate how well the system is performing and whether additional mitigation is required. It is recommended that such monitoring be done at the site boundary with higher levels of mitigation to be implemented if dust levels are found to be excessive.

8.2 High Level Mitigation Measures

- Application of the high level mitigation measures are expected to reduce dust emissions by 40%, that their application will result in compliance to the EPP (Air)/NEPM (Air) objectives/goals;
- The Project is predicted to comply with the assessment criteria EPP (Air)/NEPM (Air) objectives/goals for PM_{10} at the public-restricted mining lease boundary, for preparation and operations over the 26 year life of the mine with the addition of high level mitigation;
- As the most problematic constituent PM_{10} is now compliant for both the preparation and operations over the 26 year life of the mine, it is then fair to assume that $PM_{2.5}$ and TSP would also be compliant at the site boundary with their appropriate criteria with the addition of high level mitigation; and
- The Project is predicted to easily comply with all relevant EPP (Air)/NEPM (Air) air quality objectives and goals at all sensitive receptors identified and at Collinsville for preparation and operations over the 26 year life of the mine with the addition of high level mitigation.

SEIS recommendation – PM2.5 must be measured in this, the 13th year of the 21st Century under a democratic developed first world government.

EIS:

11.11 Discussion on High Level Mitigation Results

Application of the high level mitigation measures are expected to reduce dust emissions by 40% and will result in compliance to the EPP (Air)/NEPM (Air) objectives/goals.
The Project is predicted to comply with the assessment criteria EPP (Air)/NEPM (Air) objectives/goals for PM_{10} at the public-restricted Project boundary, for preparation and operations over the 26 year life of the mine with the addition of high level mitigation.
As the most problematic constituent PM_{10} is now compliant for both the preparation and operations over the 26 year life of the mine, it is then fair to assume that $PM_{2.5}$ and TSP would also be compliant at the site boundary with their appropriate criteria with the addition of high level mitigation.

This prediction seems to defy common sense as i would expect PM2.5 particles which are lighter I presume than PM10, to travel further by wind.

DSEIS:

Comment GR 23

11.11 Discussion on High Level Mitigation Results
Application of the high level mitigation measures are expected to reduce dust emissions by 40% and will result in compliance to the EPP (Air)NEPM (Air) objectives/goals. The Project is predicted to comply with the assessment criteria EPP (Air) NEPM (Air) objectives/goals for PM to at the public-restricted Project boundary, for preparation and operations over the 26 year life of the mine with the addition of high level of mitigation.
As the most problematic constituent PM to is now compliant for both the preparation and/ operations over the 26 year life of mine, it is assumed fair that $PM_{2.5}$ and TSP would also be compliant at the site boundary with their appropriate criteria with the addition of light/eve/ mitigation. This prediction seems to defy common sense as I could expect $PM_{2.5}$ particles which are light I presume than PM 10, to travel further by wind. (sic.Appendix K)

Response

Refer to comment MCG 34.

See MCG 34 above.

Response

$PM_{2.5}$ was modelled and assessed and found to have lesser impact than PM_{10}.

EIS sub:
Appendix K

3.3.3 Particulate Matter – In-Air Concentration

There are no existing data available for the average concentrations of PM_{10} and $PM_{2.5}$ within the Sonoma project area. The PB assessment assumed a background PM_{10} concentration of 16.8 µg/m_3, based on the Mackay (1999) data provided by the EPA.
Using a similar method to that used to calculate background dust deposition rates, a corrected background PM_{10} concentration of 27.3 µg/m_3 was calculated and applied for this study. The adopted background $PM_{2.5}$ concentration is 12.3 µg/m_3 (Table 4). This value was derived based on the assumptions made by GHD for a similar project[6] involving field equipment where the ratio of PM_{10} to $PM_{2.5}$ was measured at 45%. The field work was for an air quality impact assessment for a quarry site with similar meteorological conditions for dry inland winds with a climate similar to the Collinsville area (i.e. temperatures above 25ºC and humidity levels below 50%). When there were northerly winds from inland Australia, during the dry part of the year, background levels of particulates were measured (these being upwind of the quarry source). In this way, a measure of the PM_{10} to $PM_{2.5}$ ratio was obtained for 'natural' summertime dry continental climatic conditions.
5 Connell Hatch 2008, Final Report: Environmental Evaluation of Fugitive Coal Dust Emissions from Coal Trains on the Goonyella, Blackwater and Moura Coal Rail Systems. Prepared for Queensland Rail Limited.
6 Project was for a quarry site with a wind climate similar to Collinsville and temperatures above 25ºC and humidity below 50%.

It is unfortunate that there is not more data available for dust from the Sonoma Coal mine as it is close to Collinsville and Scottville and it has been know for some time that coal dust and especially PM2.5 particles present serious health issues.

(This highlighted material was not included in the DSEIS or the SEIS published by the proponent.)

Coal s Assault on Human Health - A Report From Physicians For Social Responsibility
By Alan H. Lockwood, MD FAAN Kristen Welker-Hood, ScD MSN RN Molly Rauch, MPH Barbara Gottlieb
By convention, and for purposes of monitoring air to evaluate compliance with air quality standards, the PMs of greatest concern are those with a diameter of 2.5 um or less (PM2.5). These small particles are the most likely to penetrate deeply into the lungs, reach the alveoli, and initiate the pathophysiological sequences leading to acute and chronic manifestations of cardiovascular heart disease (CHD).

Medical Journal of Australia 19.10.11 The mining and burning of coal: effects on health and the environment. William Castleden, David Shearman, George Crisp and Philip Finch.
Coalmining poses a significant threat to the integrity of aquifers, which may be hydrologically connected to other groundwater-dependent ecosystems including farm dams, bores and rivers. Water from coal mines must be disposed of and waste material is often held within the surface lease of a mine, introducing a risk of contamination of human food sources. Pollution of the environment can also occur through windblown dust during transportation, where coal is washed and at export ports.
Australia's international obligations under the agreement reached at the United Nations Conference on Environment and Development (UNCED June 1992) give EPAs permission to use the precautionary principle—that an action should not be taken if the consequences are uncertain and likely to be dangerous to the public or the environment—in their assessments. This is rarely, if ever, invoked in the case of approving new coalmines. Health impact statements for proposed mines are not requested by state governments, so the EPAs have, unwittingly, become responsible for the protection of significant aspects of public health.
The time has come for Environmental Protection Agencies to take the precautionary principle into account during their deliberations on new coalmining applications.

Epstein PR, Buonocore JJ, Eckerle K, et al. **Full cost accounting for the life cycle of coal.**
Ann NY Acad Sci 2011; 1219: 73-98.
Epstein and colleagues recently reported an analysis of the health and environmental costs of coal in the US and concluded that the damage caused by coal should double or triple the costs of coal-generated electricity.

Australian Air Quality Group. Particles. AAQG: Armidale, 25 Apr 2010. http://aaqg.3sc.net/air-pollution-and-health/particles (accessed Aug 2011).
The smallest particles, particulate matter (PM) 2.5, are the most damaging.

Relations Between Health Indicators and Residential Proximity to Coal Mining in West Virginia

Michael Hendryx, PhD and Melissa M. Ahern, PhD April 2008
As coal production increased, health status worsened, and rates of cardiopulmonary disease, lung disease, cardiovascular disease, diabetes, and kidney disease increased . Within larger disease categories, specific types of disease associated with coal production included chronic obstructive pulmonary disease (COPD), black lung disease, and hypertension.

British Trade Unions Congress (TUC) General Secretary Brendan Barber said on 2.9.11:
'Because disease and death caused by the various types of dust can take many years to develop, both employers and regulators take them far less seriously than deaths caused by injury, yet they are just as tragic for both the workers and their families.'
http://www.tuc.org.uk/workplace/tuc-19972-f0.cfm

DSEIS:
Comment GR 24
There are no existing data available for the average concentrations of PM to (sic.10) and $PM_{2.5}$ within the Sonoma project area. The PB assessment assumed a background PM to (sic10) concentration of 16.8 ug/m3, based on the Mackay (1999) data provided by the EPA.
Using a similar method to that used to calculate background dust deposition rates, a corrected background PM_{10} concentration of 27.3 ug/m_3 was calculated and applied for this study. The adopted background $PM_{2.5}$ concentration is 12.3 uglm3 (Table 4). This value was derived based on the assumptions made by GHD for a similar project involving field equipment where the ratio of PM (sic.10)to $PM_{2.5}$ was measured at 45%. The field work was for an air quality Impact assessment for a quarry site with similar meteorological conditions for dry inland winds with a climate similar to the Collinsville area (i.e. temperatures above 25°C and humidity levels below 50%). When there were northerly winds from inland Australia, during the dry part of the year; background levels of particulates were measured (these being upwind of the quarry source). In this way, a measure of the PM_{10} to $PM_{2.5}$ ratio was obtained for 'natural' summertime dry continental climatic conditions.
It is unfortunate that there is not more data available for dust from the Sonoma Coal mine as it is close to Collinsville and Scottville and it has been known for some time that coal dust and especially $PM_{2.5}$ particles present serious health issues.
Response
Sonoma operations measure dust fallout at several locations and PM_{10} at Collinsville Airport. This data gathering is part of the environmental management of the site with reporting to government regulator. Any problem with elevated levels requires intervention via the dust management system – this is as proposed in the technical report of Appendix K of the EIS Report.

(Appendix K is 23mb and too large to include, it does not seem to be available on line anymore.)