

Appendix A
OEH Tender Document

**INTERNATIONAL BEST PRACTICE MEASURES TO PREVENT AND/OR MINIMISE
PARTICLE EMISSIONS FROM COAL MINING**

TECHNICAL BRIEF

The Department of Environment, Climate Change and Water NSW (DECCW) is undertaking a major review of the management of particle emissions from coal mining in the Hunter Valley. As part of this review, DECCW is commissioning a study to identify international best practice measures to prevent and/or minimise particle emissions from coal mining in the Hunter Valley.

1. OBJECTIVE

The objectives of the study are to:

- Review international best practice measures to prevent and/or minimise particle emissions from all activities associated with NSW coal mines, including land rehabilitation.
- Compare international best practice measures to prevent and/or minimise particle emissions with those currently used at NSW coal mines.
- Make recommendations regarding the adoption of international best practice measures that could be practicably implemented in NSW at existing and proposed coal mines.
- Estimate the likely reduction in particle emissions associated with adopting each international best practice measure at NSW coal mines.
- Estimate the costs associated with adopting each international best practice measure at NSW coal mines.

2. BACKGROUND INFORMATION

There is growing community concern regarding both the health and amenity impacts associated with particle emissions from coal mining in the Hunter Valley. Many recent scientific studies have confirmed that exposure to particles are associated with health risks.

The coal mining industry is the:

- Largest industrial emitter of PM₁₀ in the NSW Greater Metropolitan Region (GMR), emitting 25,256 kg of PM₁₀ per year, or 33.6% of anthropogenic emissions¹; and
- Third largest emitter of PM_{2.5} in the GMR, emitting 4,154 kg of PM_{2.5} per year, or 13.6% of anthropogenic emissions¹.

The *Protection of the Environment Operations Act 1997* (POEO Act) is the key piece of environment protection legislation administered by the Environment Protection Authority (EPA), which is part of DECCW.

The POEO Act establishes a system of environment protection licensing for 'scheduled' activities with the potential to have a significant impact on the environment. Schedule 1 of the POEO Act lists those scheduled activities, which are licensed by the EPA. A coal mine is declared to be a scheduled activity if:

- (a) it has a capacity to produce more than 500 tonnes of coal per day; or
- (b) it has disturbed, is disturbing or will disturb a total surface area of more than 4 hectares of land.

¹ Air Emissions Inventory for the Greater Metropolitan Region in NSW
<http://www.environment.nsw.gov.au/air/airinventory.htm>

Part 5.4 (sections 124–135) of the POEO Act deals specifically with air pollution from EPA-licensed premises. This includes the general obligation that the occupier of a premises must:

- not cause air pollution by failing to operate or maintain plant, carry out work or deal with materials in a proper and efficient manner (sections 124–126); and
- operate any plant by such practicable means as may be necessary to prevent or minimise air pollution (section 128).

3. SCOPE OF WORK

DECCW is seeking advice on:

- Best practice measures used internationally to prevent and/or minimise particle emissions from all activities associated with NSW coal mines.
- How international best practice measures to prevent and/or minimise particle emissions compare with those currently used at NSW coal mines.
- The international best practice measures that could be practicably implemented in NSW for existing and proposed coal mines.
- The likely reduction in particle emissions associated with adopting each international best practice measure at NSW coal mines.
- The costs associated with adopting each international best practice measure at NSW coal mines.

4. TASKS FOR THE CONSULTANT

- Identify the major sources of particles from coal mines (i.e. TSP, PM₁₀ and PM_{2.5}) and rank them in descending order of significance for offsite impacts.
- Identify current operational practices and/or emission controls for minimising particle emissions from coal mining in the Hunter Valley. In identifying current operational practices and/or emission controls, the consultant will visit a representative sample of operational open-cut coal mines in the Hunter Valley.
- Research and identify international best practice to prevent and/or minimise particle emissions from all activities associated with coal mining including land rehabilitation. This may involve site visits to relevant interstate and overseas mines.
- Evaluate the practicality of implementing best practice identified in 2. at coal mines in the Hunter Valley. The NSW Minerals Council and a representative sample of operational open-cut coal mines in the Hunter Valley are to be consulted as part of the evaluation. The reasoning behind all findings of the evaluation is to be clearly stated.

The consultant should liaise with DECCW at the start of the project to discuss the tasks to be completed.

5. DELIVERABLES

- A draft report covering all of the points defined in the Scope of Work.
- A final report covering all of the points defined in the Scope of Work.
- A presentation of the final report to DECCW.

The final report must include:

- An executive summary written in plain English;
- A detailed report addressing the objectives of the study as outlined above; and
- Recommendations.

Electronic reports need to be submitted in Microsoft Word 2003 and Acrobat compatible formats, while electronic data needs to be submitted in Microsoft Excel 2003 and Microsoft Access 2003 compatible format.

6. PROJECT MANAGEMENT

6.1. Timeframes and Milestones

Milestones and progress payments are detailed below:

- Milestone 1: Agreement on scope of work and commencement of study (40% progress payment on Friday 4 June 2010).
- Milestone 2: Delivery of draft report addressing objectives and scope of work to the satisfaction of DECCW (30% progress payment on Friday 23 July 2010).
- Milestone 3: Delivery of final report addressing objectives and scope of work to the satisfaction of DECCW (final 30% payment on Friday 6 August 2010).

With each request for payment, the consultant should submit a consolidated progress report covering the items in Section 6.2. Progress Reports.

6.2. Progress Reports

Brief progress reports are required to be submitted to the DECCW project officer by C.O.B. on Friday every week. The progress reports must be emailed to the project officer and include the following details:

- Tasks undertaken in the last week and personnel responsible for the task.
- Tasks planned for the next week and personnel responsible for the task.
- Any outstanding information/new issues.
- Meetings held / planned (inc. dates) (External / Internal).
- Budgetary issues / changes to scope / schedule issues.

6.3. Contract

The successful consultant will be required to sign a standard DECCW consultancy contract ("the Agreement"). All major changes in direction of the project need to be confirmed in writing by the consultant keeping a running log of all changes requested and confirmed.

7. PROJECT BUDGET

The indicative budget for this work is \$100,000 (exclusive of GST)

8. REQUIREMENTS FOR SUBMITTING A TENDER

In providing a proposal for this work, please provide a submission including:

- A brief summary of your relevant experience in this area;
- A detailed summary of your relevant experience in this area;
- A detailed discussion of the approach to the study and methods that will be used;
- CVs for the consultant(s) who would conduct the work;
- Detailed work plans including timetables for delivering outputs;
- Demonstrated understanding of the requirements of the consultancy (including any proposed variations or innovations);
- Proposed timetable (including the availability of key personnel);
- Proposed budget;
- Documentation of previous relevant experience;
- Names of relevant referees; and
- Declaration of any conflict of interest or risk of conflict of interest.

9. TENDER EVALUATION CRITERIA

The selection criteria used to award this tender will be:

- Quality of the proposed method and approach to the project;
- Experience in similar tasks and/or demonstrated capacity to undertake the project;
- The relevant expertise of the proposed consultants;
- Ability to perform the work within the timeframe;
- Value for money; and
- High level of report writing and communication skills.

10. LODGEMENT OF TENDER

Proposals must be lodged in hard copy format in triplicate to:
The Tender Box
Department of Environment, Climate Change and Water
Level 14, 59-61 Goulburn Street
SYDNEY NSW 2000

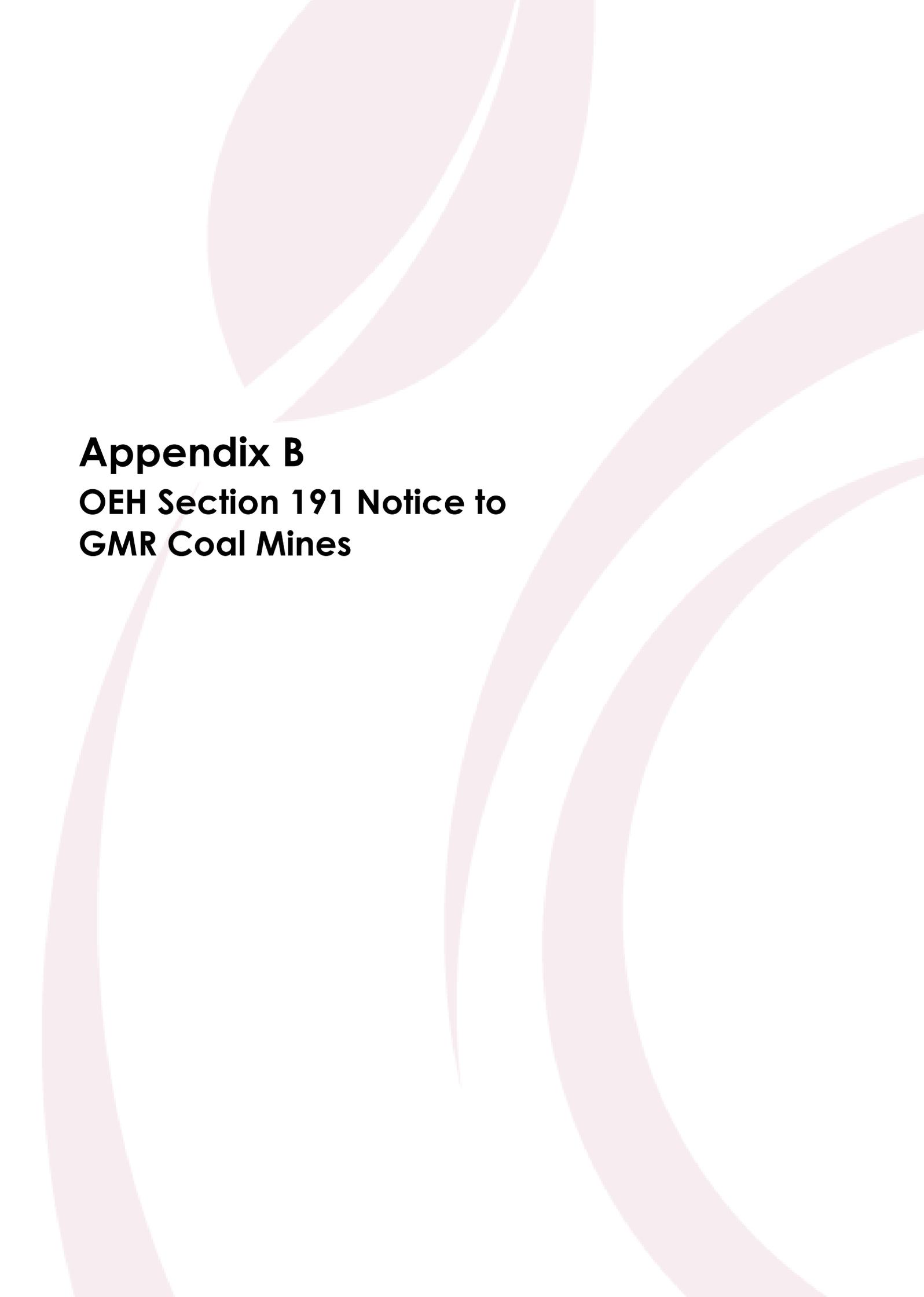
Proposals must also be lodged via email to:
Nick.Agapides@environment.nsw.gov.au.

All proposals should be marked to the attention of:
Nick Agapides
Manager Major Air Projects
Air Policy Section
Climate Change, Policy and Programs Group
Department of Environment, Climate Change and Water NSW

Tenders must be received by 10:00 am, Friday 21 May 2010.

Further Information:

Nick Agapides
Manager Major Air Projects
Air Policy Section
Climate Change, Policy and Programs Group
Department of Environment, Climate Change and Water NSW
Telephone: 02 9995 6047
Facsimile: 02 9995 5938
Email: Nick.Agapides@environment.nsw.gov.au



Appendix B
OEH Section 191 Notice to
GMR Coal Mines

Your reference: -
Our reference: DOC09/35294 & FIL09/9889
Contact: Nick Agapides, 02 9995 6047

<<Contact_Title>> <<Contact_Given_Name>> <<Contact_Surname>>
<<Contact_Position>>
<<AP_Name>>
<<AP_Street>>
<<AP_Suburb>> <<AP_State>> <<AP_Postcode>>

Dear <<Contact_Title>> <<Contact_Surname>>

29 September 2009

**AIR EMISSIONS INVENTORY FOR THE GREATER METROPOLITAN REGION IN NSW
2008 SURVEY OF EPA-LICENSED PREMISES**

**COMPANY NAME: <<AP_Name>>
ENVIRONMENT PROTECTION LICENCE NUMBER: <<Lic_No>>
S191 NOTICE NUMBER: AP - <<Lic_No>>**

The Department of Environment, Climate Change and Water (DECCW) would like to advise you that the air emissions inventory for the Greater Metropolitan Region (GMR) in NSW is being updated for the 2008 calendar year. The NSW Environment Protection Authority (EPA), which is part of DECCW, will need to obtain information from 1,109 EPA-licensed premises to complete this task.

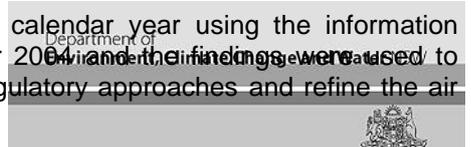
In 1998 the NSW Government released *Action for Air*, its 25-year air quality management plan for the GMR, which covers the Sydney, Lower Hunter and Illawarra regions. *Action for Air* focuses on regional air pollution and includes strategies that represent a comprehensive attack on the two pollutants of primary concern: photochemical smog (ground-level ozone); and fine particle pollution.

The State Plan - A New Direction for NSW sets targets to improve outcomes and services for the people of NSW. *The State Plan* commits the NSW Government to meeting the goals of the National Environment Protection (Ambient Air Quality) Measure (Ambient Air Quality NEPM). These national health-based goals apply to six air pollutants: carbon monoxide; lead; sulfur dioxide; nitrogen dioxide; ozone and fine particles.

To ensure proposed policies in *Action for Air* are based on the most credible and up-to-date information and progress in meeting *The State Plan* targets is supported by sound evidence-based data, DECCW maintains an air emissions inventory.

You may have participated in a survey of 1,161 EPA-licensed premises during November to December 2004. You may also have participated in stakeholder workshops during June 2007, to discuss the inventory results prior to their release and also reviewed emission estimates for your premises before they were finalised. Your timely and comprehensive input was critical to ensure the industry sectors' contribution to air pollution was accurately represented.

In November 2007, DECCW published an inventory for the 2003 calendar year using the information provided by EPA-licensed premises during November to December 2004 and the findings were used to assess the effectiveness of DECCW's air policies, programs and regulatory approaches and refine the air quality management strategies contained in *Action for Air*.



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For additional information about the air emissions inventory for the 2003 calendar year, please refer to Attachment 1 to this letter or the DECCW web site <http://www.environment.nsw.gov.au/air/airinventory.htm>.

The existing inventory represents activities for the 2003 calendar year. This update is needed to accurately characterise current air quality in the GMR, given the improvements in air quality achieved through various domestic, industrial and on-road mobile source related programs that have been implemented since that time. It is necessary to update the inventory for the 2008 calendar year. This will allow each sectors' contribution to air pollutant emissions to be re-evaluated, as the most economic and environmentally effective air quality management and regulatory responses are developed and canvassed with stakeholders.

We have designed this approach to minimise duplication with the National Pollutant Inventory (NPI). Only 320 of the 1,109 EPA-licensed premises being surveyed are NPI reporters, so the survey is necessary to ensure emissions from the industry sector are accurately estimated. You may also be aware that emissions reported to the NPI are aggregated totals for each premises, while the survey seeks emissions disaggregated by each source so a robust analysis can be conducted to support effective regulation of air pollution.

The EPA is conducting the 2008 survey through a Notice to Provide Information and/or Records ("the Notice") issued under s191 of the *Protection of the Environment Operations Act 1997* ("the Act"). The information sought in the Notice relates to the EPA's functions and responsibilities under the Act. The use of the EPA's powers in this way is for the purpose of administering the Act and protecting the environment.

Attachment 2 to this letter includes the Notice, while Annexure A to the Notice includes a Questionnaire(s), which you must complete. One (1) copy of the completed Questionnaire(s) must be provided in writing by no later than 10 November 2009 and addressed to:

Mr. Nick Agapides
Manager Major Air Projects
Climate Change, Policy and Programs Group
Department of Environment, Climate Change and Water
PO Box A290
SYDNEY SOUTH NSW 1232

If you need to discuss any matters in relation to the Notice, please contact Mr. Nick Agapides on (02) 9995 6047 or Nick.Agapides@environment.nsw.gov.au. If you need assistance in completing the Questionnaire(s), please contact the Air Emissions Inventory Helpdesk at: air.majorprojects@environment.nsw.gov.au, or as follows:

Air Emissions Inventory Helpdesk Staff Member	Phone Number
Mr. Nick Agapides	(02) 9995 6047
Mr. Kelsey Bawden	(02) 9995 6094

I trust you share DECCW's desire that future decisions on managing air pollution issues are based on accurate industry information and hope we can continue to work cooperatively in managing air quality in NSW.

Yours sincerely



JOE WOODWARD
Deputy Director General
Environment Protection and Regulation

- Attachment
1. Air Emissions Inventory Brochure
 2. s191 Notice to Provide Information and/or Records
 3. Questionnaire(s)

Air Emissions Inventory for the Greater Metropolitan Region in NSW



Why do we need an air emissions inventory?

Air pollution comes from many sources, so we need to know the contribution each one makes in order to develop the best approaches for improving air quality. The last air emissions inventory for NSW was completed in 1996 and although that data has served us well until now, emissions have changed, making it necessary for a new inventory.

The major task of developing the new inventory commenced in 2004 and took nearly three years to complete. The results are now available and being used to shape the way we improve air quality in NSW.

What is the air emissions inventory?

The air emissions inventory is a detailed listing of pollutants discharged into the atmosphere by each source type during a given time period and at a specific location. The study area covers 57,330 km², which includes the greater Sydney, Newcastle and Wollongong regions, known collectively as the Greater Metropolitan Region (GMR). Figure 1 shows the GMR, Sydney, Newcastle and Wollongong regions. Approximately 76% of the NSW population resides in the GMR.

The inventory includes emissions from biogenic (i.e. natural) and anthropogenic (i.e. human) derived sources as outlined below:

- Biogenic (e.g. bushfires, trees and windborne dust)
- Commercial businesses (e.g. quarries, service stations and smash repairers)
- Domestic activities (e.g. house painting, lawn mowing and wood heaters)
- Industrial premises (e.g. oil refineries, power stations and steelworks)
- Off-road mobile (e.g. aircraft, railways and recreational boats)
- On-road mobile (e.g. buses, cars and trucks).

The inventory includes over 90 air pollutants. They are:

- criteria pollutants (i.e. carbon monoxide (CO), lead, oxides of nitrogen (NO_x), PM₁₀, PM_{2.5}, sulfur dioxide (SO₂) and volatile organic compounds (VOCs))
- metal air toxics (e.g. antimony, arsenic, beryllium, chromium and nickel)
- organic air toxics (e.g. benzene, formaldehyde, polycyclic aromatic hydrocarbons (PAHs), toluene and xylenes).

Air emissions data can be presented either for the GMR, Sydney, Newcastle or Wollongong regions, or each of the 66 local government areas (LGAs) within the GMR. Emissions vary by month, weekday/weekend day and hour of the day, and can be presented on an annual, monthly, daily or hourly basis.



Figure 1 Definition of GMR, Sydney, Newcastle and Wollongong Regions

How was the air emissions inventory completed?

The air emissions inventory project was largely funded by the NSW Environmental Trust, with additional funding provided by the Department of Environment and Climate Change NSW (DECC) and the Commonwealth Department of the Environment and Water Resources in line with State and Commonwealth agreements under the National Pollutant Inventory (NPI) National Environment Protection Measure (NEPM).

After six months preparatory work and project planning, the inventory project formally commenced in July 2004. The inventory project has been a significant air quality study that has taken nearly three years to complete.

DECC has been responsible for overall project management and three contractors have provided DECC with expertise in emission estimation methodology design, database design, activity data collection, emissions estimation and quality assurance/quality control. Over ten engineers and scientists have been responsible for completing the project.

How have air emissions been estimated?

Activity data has been obtained from industry groups, government departments and other service providers. A number of surveys have also been conducted to obtain activity data.

Air emissions have been estimated by combining activity data with emission factors. Where available, source emission test data has been used in preference to emission factors for industrial and commercial sources.

The emissions have been assigned to map coordinates for industrial and commercial point sources, or each 1-km by 1-km grid cell for biogenic, domestic-commercial, off-road mobile and on-road mobile area sources. Emissions are then calculated for months, weekdays/weekend days and hours using factors derived from the activity data. Figure 2 shows the grid coordinate system.

Emission estimation techniques for all source types have been based on either published Australian (i.e. NPI) or overseas methodologies (e.g. California Air Resources Board (CARB) or United States Environmental Protection Agency (USEPA)).

The base year of the inventory represents activities that took place in the 2003 calendar year and emission projection factors have been developed for every year from 2004 to 2031 using the methodologies published by USEPA, which is shown below in Equation 1 and the following data:

- Final energy usage growth data published by Australian Bureau of Agriculture and Resource Economics (ABARE)
- Free standing dwelling growth data published by Australian Bureau of Statistics (ABS) and Transport and Population Data Centre (TPDC)
- Population growth data published by ABS and TPDC
- Primary energy usage growth data published by ABARE
- Total dwelling growth data published by ABS and TPDC
- Vehicle kilometres travelled growth data published by TPDC.

$$\text{Equation 1 } E_{i,j,n} = E_{i,j,2003} \times PF_{j,n}$$

where:

$E_{i,j,n}$	= Emission of substance i from source type j for year n	tonnes/year
$E_{i,j,2003}$	= Emission of substance i from source type j for the base year 2003	tonnes/year
$PF_{j,n}$	= Emission projection factor for source type j for year n	

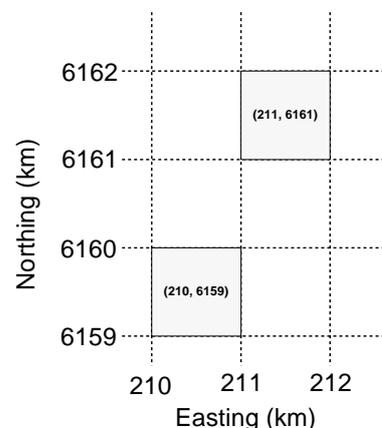


Figure 2 Grid Coordinate System

Where is the air emissions data stored?

The air emissions inventory data is stored in a database, which includes several features such as:

- air pollution modelling using models developed by California Institute of Technology (CIT), CSIRO and USEPA
- emissions charting by air pollutant, source, LGA and region
- emissions data visualisation using geographical information systems (GIS)
- emissions forecasting up to the year 2031
- emissions modelling to test out policy scenarios
- environmental reporting by air pollutant, source, LGA and region
- source and pollutant prioritisation using CARB facility prioritisation guidelines
- VOC prioritisation based on photochemical smog forming potential using the CARB maximum incremental reactivity (MIR) methodology.

Figure 3 presents the role of the air emissions inventory within the air quality management cycle.

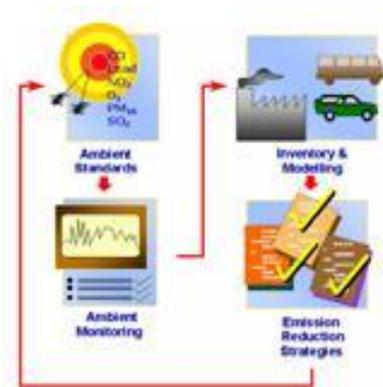


Figure 3 Air Emissions Inventory within the Air Quality Management Cycle

What are the priority air pollutants?

Air quality in the GMR has been steadily improving since the 1980s. In 1998, ambient air quality standards and goals for six criteria pollutants (i.e. CO, lead, NO₂, O₃, PM₁₀ and SO₂) were set in the Ambient Air Quality NEPM. Ambient concentrations of CO, lead, NO₂ and SO₂ are all consistently below their respective national standards. However, some exceedences of national standards occur for O₃ and periodically for PM₁₀. Emissions of NO_x, PM₁₀, PM_{2.5} and VOCs are the air pollutants of primary concern in the GMR and Sydney region. Figure 4 illustrates air pollution sources, their transport and transformation and parts of the environment that are impacted by air pollution.

NO_x and VOCs (or photochemical smog precursors), in the presence of sunlight, undergo a series of complex reactions, which are responsible for photochemical smog formation. Ground-level ozone is an indicator of photochemical smog, which is characterised by a white atmospheric haze during the warmer months of the year.

PM₁₀ and PM_{2.5} (or particles with an aerodynamic equivalent diameter less than 10 microns and 2.5 microns respectively) are responsible for fine particulate matter pollution. Fine particulate matter pollution is characterised by a brown atmospheric haze during the cooler months of the year.

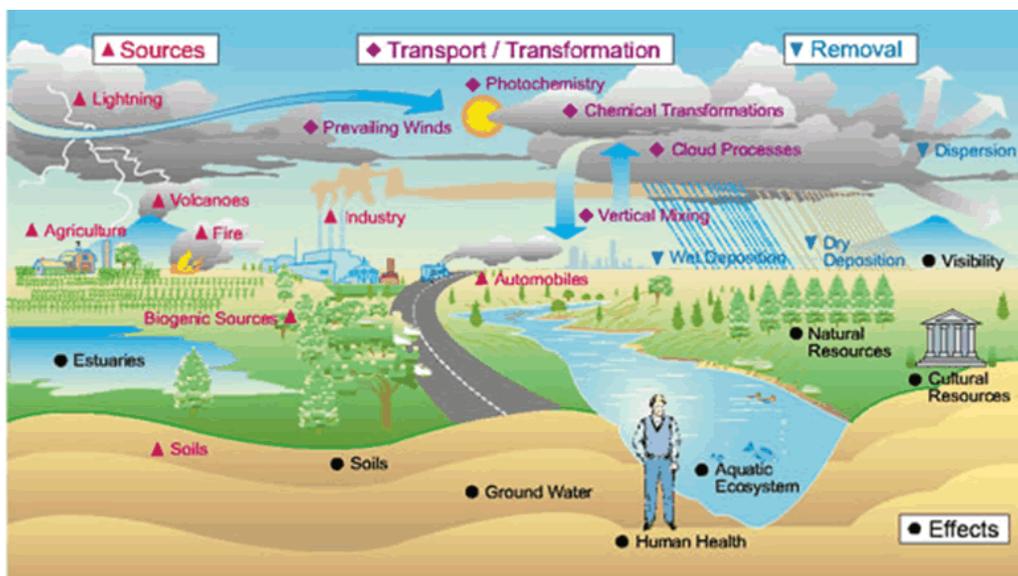


Figure 4 Sources of Air Pollution and their Impact on the Environment

What are the major anthropogenic sources in the GMR?

Table 1 presents annual anthropogenic emissions of criteria pollutants in the GMR.

Table 1 Annual Anthropogenic Emissions of Criteria Pollutants in the GMR

Substance	Anthropogenic Source Type					Anthropogenic Total
	Commercial	Domestic-Commercial	Industrial	Off-Road Mobile	On-Road Mobile	
	tonnes/year					
CO	1,801	90,516	603,133	32,144	559,047	1,286,641
Lead	0.194	0.153	11.964	54.917	13.701	80.929
NO _x	2,648	1,791	175,537	23,470	88,609	292,054
PM ₁₀	4,032	6,651	46,530	14,566	3,349	75,128
PM _{2.5}	1,270	6,428	13,127	6,486	3,188	30,499
SO ₂	71.005	143	295,819	4,170	1,660	301,863
VOCs	13,844	67,303	17,786	7,640	64,493	171,067

- CO – Industrial, on-road mobile and domestic-commercial sources make-up ~97.4%
- Lead – Off-road mobile, on-road mobile and industrial sources make-up ~99.6%
- NO_x – Industrial, on-road mobile and off-road mobile sources make-up ~98.4%
- PM₁₀ – Industrial, off-road mobile and domestic-commercial sources make-up ~90.2%
- PM_{2.5} – Industrial, off-road mobile, domestic-commercial and on-road mobile sources make-up ~95.8%
- SO₂ – Industrial sources make-up ~98%
- VOCs – Domestic-commercial, on-road mobile, industrial and commercial sources make-up ~95.5%.

Figures 5 to 8 show major source contributions to annual anthropogenic emissions of NO_x, PM₁₀, PM_{2.5} and VOCs in the GMR.

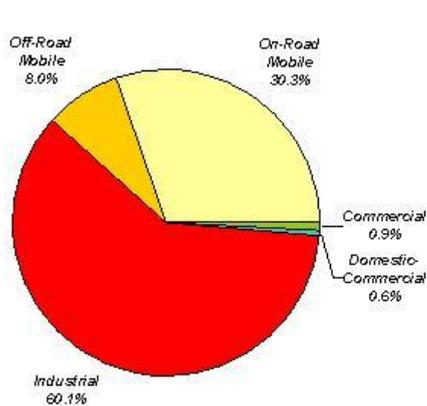


Figure 5 Annual Emissions of NO_x in the GMR

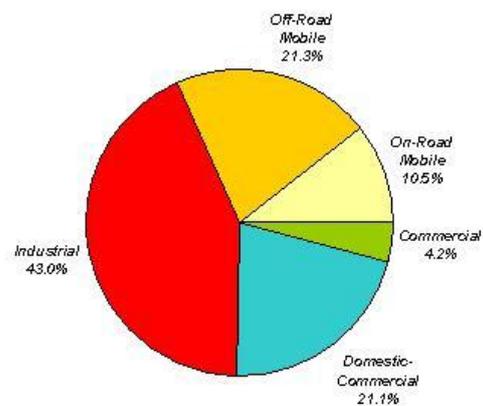


Figure 7 Annual Emissions of PM_{2.5} in the GMR

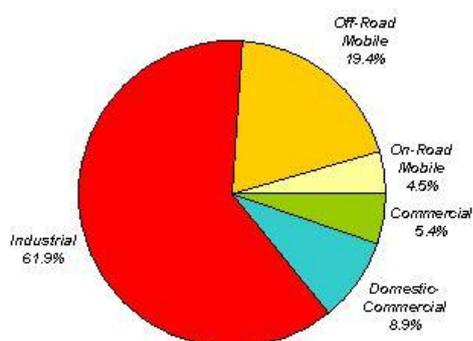


Figure 6 Annual Emissions of PM₁₀ in the GMR

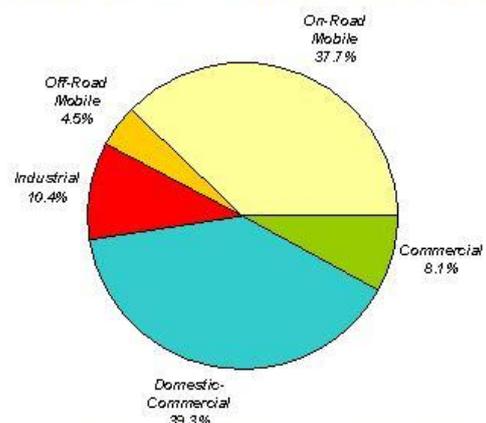


Figure 8 Annual Emissions of VOCs in the GMR

What are the major anthropogenic sources in the Sydney region?

Table 2 presents annual anthropogenic emissions of criteria pollutants in the Sydney region.

Table 2 Annual Anthropogenic Emissions of Criteria Pollutants in the Sydney Region

Substance	Anthropogenic Source Type					Anthropogenic Total
	Commercial	Domestic-Commercial	Industrial	Off-Road Mobile	On-Road Mobile	
CO	1,265	67,221	8,004	20,251	431,270	528,011
Lead	0.189	0.114	4.703	13.325	10.713	29.044
NO _x	1,870	1,356	14,032	9,514	65,996	92,768
PM ₁₀	2,143	4,993	7,911	3,707	2,552	21,305
PM _{2.5}	723	4,826	3,390	1,761	2,426	13,126
SO ₂	48.074	108	10,980	1,374	1,254	13,764
VOCs	9,973	51,929	13,989	4,772	50,171	130,834

- CO – On-road mobile and domestic-commercial sources make-up ~94.4%
- Lead – Off-road mobile, on-road mobile and industrial sources make-up ~99%
- NO_x – On-road mobile, industrial and off-road mobile sources make-up ~96.5%
- PM₁₀ – Industrial, domestic-commercial, off-road mobile and on-road mobile sources make-up ~89.9%
- PM_{2.5} – Domestic-commercial, industrial, on-road mobile and off-road mobile sources make-up ~94.5%
- SO₂ – Industrial sources make-up ~79.8%
- VOCs – On-road mobile, domestic-commercial, industrial and commercial sources make-up ~96.3%

Figures 9 to 12 show major source contributions to annual anthropogenic emissions of NO_x, PM₁₀, PM_{2.5} and VOCs in the Sydney region.

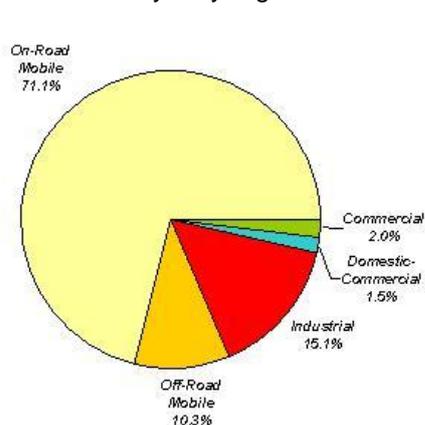


Figure 9 Annual Emissions of NO_x in the Sydney Region

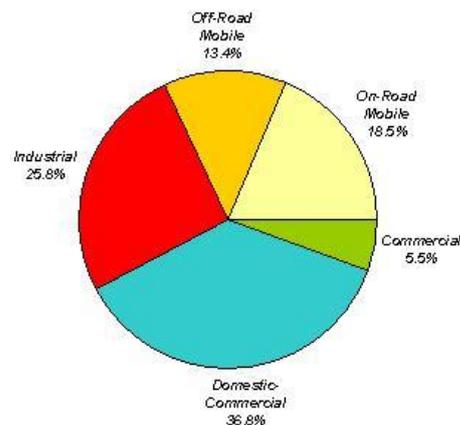


Figure 11 Annual Emissions of PM_{2.5} in the Sydney Region

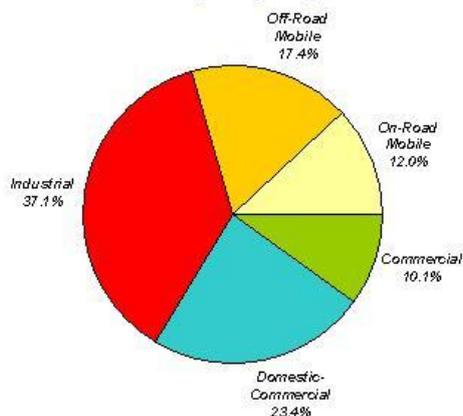


Figure 10 Annual Emissions of PM₁₀ in the Sydney Region

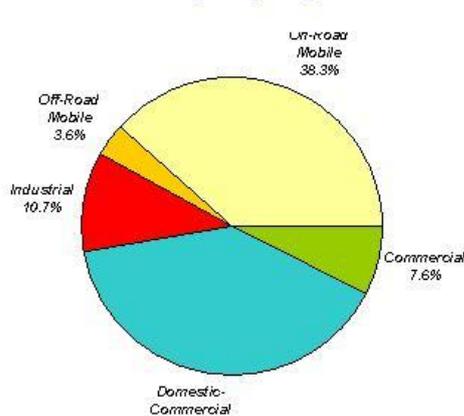


Figure 12 Annual Emissions of VOCs in the Sydney Region

How will the information be used?

In 1998 the NSW Government released 'Action for Air', its 25-year air quality management plan for the GMR. 'Action for Air' focuses on regional air pollution. The strategies in the plan aim to reduce the two pollutants of primary concern:

- photochemical smog (i.e. ground-level ozone)
- fine particle pollution (i.e. PM₁₀ and PM_{2.5}).

The inventory will be used to refine existing emission reduction strategies and develop new-targeted strategies for all major sectors to further reduce their emissions. These will be included in the next review of 'Action for Air' in 2007.

Where can I obtain additional information?

If you require more detailed information about activity data, emission estimation methodologies, sources and emissions of other air pollutants included in the air emissions inventory you can visit the DECC web site at <http://www.environment.nsw.gov.au/air/airinventory.htm> and download the following documents:

- Criteria Pollutant Emissions for all Sectors
- Anthropogenic Ozone Precursors and Particle Emissions in the Greater Metropolitan and Sydney Regions
- Biogenic Emissions Module
- Commercial Emissions Module
- Domestic-Commercial Emissions Module
- Industrial Emissions Module
- Off-Road Mobile Emissions Module
- On-Road Mobile Emissions Module.

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Website: www.environment.nsw.gov.au

In July 2009 the Department of Environment and Climate Change became known as the Department of Environment, Climate Change and Water NSW.

<<Contact_Title>> <<Contact_Given_Name>> <<Contact_Surname>>
<<Contact_Position>>
<<AP_Name>>
<<AP_Street>>
<<AP_Suburb>> <<AP_State>> <<AP_Postcode>>
Environment Protection Licence Number: <<Lic_No>>
ACN or ARBN: <<ACN_or_ARBN>>

Notice number AP - <<Lic_No>>

File number FIL09/9889

Date 29 September 2009

NOTICE TO PROVIDE INFORMATION AND/OR RECORDS

BACKGROUND

- A. The NSW Environment Protection Authority (“**the EPA**”) is part of the Department of Environment, Climate Change and Water (“**DECCW**”).
- B. The EPA is responsible for the administration and enforcement of the *Protection of the Environment Operations Act 1997* (“**the Act**”).
- C. The EPA is conducting a survey of EPA-licensed premises (“**the survey**”) to contribute to a 2008 calendar year air emissions inventory (“**the inventory**”) being prepared for the Greater Metropolitan Region in NSW (“**the GMR**”). The inventory will include over 850 substances from biogenic, commercial, domestic, industrial, off-road mobile and on-road mobile sources.
- D. In November 2007, DECCW published an inventory for the 2003 calendar year using the information provided by EPA-licensed premises during November to December 2004. The findings were used to refine the air quality management strategies contained in the NSW Government’s *Action for Air* policy document as well as policies and programs developed and administered by the EPA. The inventory has also enabled the EPA to more effectively regulate air pollution under the Act.
- E. Since the inventory represents activities for the 2003 calendar year, it is considered the information does not accurately characterise current air quality in the GMR, given the improvements in air quality achieved through various domestic, industrial and on-road mobile source related programs that have been implemented since that time. The EPA believes that a re-evaluation of each sectors’ contribution to air pollutant emissions is required, so the most economic and environmentally effective air quality management and regulatory responses are continually reviewed, developed and canvassed with stakeholders, hence the need to update the inventory for the 2008 calendar year.
- F. The 2008 calendar year inventory will be used to contribute to the development of new air policy and programs in New South Wales. It is also anticipated the new inventory will be used to:
 - Prioritise sources and pollutants of concern;
 - Assess the effectiveness of air policies, programs and regulatory approaches;
 - Enable the EPA to more effectively regulate air pollution under the Act;
 - Forecast future emission scenarios;
 - Contribute to air pollution modelling; and
 - Contribute to environmental reporting relating to air quality.
- G. A questionnaire(s) (“**the Questionnaire**”) is attached to this Notice at **Annexure A**.
- H. This Notice requires you to submit **one (1) copy** of the completed **Questionnaire(s)** to the EPA.
- I. Information collected by the EPA under this Notice relates to the functions and responsibilities of the EPA under the Act and is for the purposes of administering the Act and protecting the environment.

REQUIREMENT TO PROVIDE INFORMATION AND/OR RECORDS

1. I Nick Agapides, delegate of the EPA, require you to complete the attached Questionnaire(s) as it applies to your premises and provide a copy.
2. You must furnish any record specified above if that record is in your possession or you can lawfully obtain possession of it.
3. The information and/or records must be provided to the EPA by no later than **10 November 2009**.
4. The information and/or records must be provided in writing and addressed to:

**Mr. Nick Agapides
Manager Major Air Projects
Climate Change, Policy and Programs Group
Department of Environment, Climate Change and Water
PO Box A290
Sydney SOUTH NSW 1232**



.....
Mr. Nick Agapides
Manager Major Air Projects
Climate Change, Policy and Programs
(By Delegation)

WARNING AND INFORMATION ABOUT THIS NOTICE

1. It is an offence against the Act not to comply with this Notice unless you have a lawful excuse for not doing so. It is also an offence to furnish information under this Notice knowing that the information is materially false or misleading.
2. The maximum penalty that a court may impose on a corporation for not complying is \$1,000,000, with a further \$120,000 for each day the offence continues. The maximum penalty that a court may impose on an individual is \$250,000 and a further \$60,000 for each day the offence continues.
3. Under section 319A of the Act, your obligation to provide the information and/or records specified in this Notice continues until the Notice is complied with in full, even if the due date has passed.
4. The fact that the information and/or records that this Notice requires you to provide might incriminate you or make you liable to a penalty does not excuse you from having to comply with the Notice.
5. The fact that a record provided by you in compliance with this Notice might incriminate you does not make that record inadmissible in evidence against you in criminal proceedings.
6. This Notice is issued under section 191 of the Act
7. However, if you are a natural person (that is, an individual rather than, for example, a company or other incorporated body) you may object to providing information which this Notice requires you to provide on the ground that the information might incriminate you. You must still provide the information but it is not admissible in evidence against you in criminal proceedings if you make this objection except for the offence of knowingly answering a question falsely or in a way that is misleading in a material respect.
8. This warning is given for the purposes of section 212 of the Act.
9. Note: The Act defines "records" as including plans, specifications, maps, reports, books, and other documents (whether in writing, in electronic form or otherwise).

ANNEXURE A **QUESTIONNAIRE**

Please find enclosed Questionnaire(s) for activities listed in Table A.1.

Table A.1. Activity Specific Questionnaires

Activity Type
<<Activity_1>>
<<Activity_2>>
<<Activity_3>>
<<Activity_4>>
<<Activity_5>>
<<Activity_6>>
<<Activity_7>>
<<Activity_8>>
<<Activity_9>>
<<Activity_10>>
<<Activity_11>>
<<Activity_12>>

If you undertake any of the additional activities shown in Table A.2 at your premises, you need to obtain, complete and submit additional Questionnaire(s) in order for you to fully comply with the requirements of the Notice. If you need assistance in completing the Questionnaire(s), please contact the Air Emissions Inventory Helpdesk at air.majorprojects@environment.nsw.gov.au or as follows:

Air Emissions Inventory Helpdesk Staff Member	Phone Number
Mr. Nick Agapides	(02) 9995 6047
Mr. Kelsey Bawden	(02) 9995 6094

Table A.2. Activity Specific Questionnaires

Activity Type
Agricultural fertiliser (phosphate) production
Aluminium production (alumina)
Aluminium production (scrap metal)
Ammonium nitrate production
Animal accommodation
Battery production
Bird accommodation
Bitumen mixing
Boat construction maintenance (dry float)
Boat construction maintenance (general)
Boat mooring and storage
Brewing and distilling
Cement or lime handling
Cement or lime production
Ceramics production
Chemical production
Chemical storage

Activity Type
Coal washery reject or slag landfilling
Coal works
Coke production
Composting
Concrete works
Container reconditioning
Contaminated soil treatment
Crushing, grinding or separating
Dairy animal accommodation
Dairy processing
Explosives production
General agricultural processing
General animal products production
General chemicals storage
Generation of electrical power from coal
Generation of electrical power from gas
Generation of electricity not coal or gas
Glass production (container)
Glass production (float)
Hazardous, industrial or group A waste D
Hazardous, industrial or group A waste G
Helicopter-related activity
Iron or steel production (iron ore)
Iron or steel production (scrap metal)
Land-based extractive activity
Landfilling
Metal plating or coating
Metal processing
Mining for coal
Mining for minerals
Non-ferrous metal production (ore)
Non-ferrous metal production (scrap)
Non-thermal treatment of waste
Other land-based extraction
Paints polishes adhesives production
Paper or pulp production
Paper production using recycle materials
Pesticides and related products production
Petrochemical production
Petroleum products and fuel production
Petroleum products storage
Pharmaceutical and veterinary products production
Pig accommodation
Plastics resins production
Printing, packaging and visual media production
Railway systems activities
Recovery of waste

Activity Type
Recovery of waste oil
Recovery of waste tyres
Rendering or fat extraction
Road construction
Rubber products tyre production.
Scrap metal processing
Sewage treatment
Shipping in bulk
Slaughtering or processing of animals
Soap and detergent production
Sterilisation activities
Thermal treatment of waste
Waste storage
Water-based extractive activity
Wood or timber milling or processing
Wood preservation

Major Materials and Products

Q13. Please estimate the annual quantity of the main raw materials consumed (e.g. tonnes/year, litres/year). Also indicate the physical state of the raw material (i.e. solid/liquid or gas)^a. Attach a separate sheet if there is insufficient space in the table below.

Raw Material	Please circle:	Annual Quantity Used ^a
1.	solid / liquid / gas	
2.	solid / liquid / gas	
3.	solid / liquid / gas	
4.	solid / liquid / gas	
5.	solid / liquid / gas	
6.	solid / liquid / gas	
7.	solid / liquid / gas	

a Department of Environment, Climate Change & Water (DECCW) acknowledges that this information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q14. What product(s) are mined:

1. _____
2. _____
3. _____
4. _____
5. _____

Q15. Please specify the following information for each product(s) mined that is sent off-site. Attach a separate sheet if there is insufficient space in the table below.

Product Material	Annual Quantity Produced (tonnes) ^a	Off-site transfer method (e.g. truck, rail)

a Department of Environment, Climate Change & Water (DECCW) notes that this information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q16. Please estimate the total area of land that is exposed (e.g. has no vegetative cover) in ha: _____

- Q17.** Please estimate the average total area of land being worked at any particular time of the year (ha): _____
- Q18.** Please estimate the average total area of land that is cleared annually through burn off (ha): _____
- Q19.** Please indicate the 'burn off' regime (e.g. one day every three weeks) and please indicate whether there are specific periods when burning does not occur (e.g. December): _____
- Q20.** Please sketch a flow diagram representing the main stages involved in the process (e.g. land clearing → top soil removal → storage of top soil → blasting → removal of mineral → crushing → stockpile). If a "ready-made" sketch or more detailed flow diagram is available, please attach it to this questionnaire.

Air Emission Sources

Q22. Please identify all air emission sources at the facility, indicating whether any emission control technologies (e.g. baghouse or low NO_x burners for point sources) and/or management practices (e.g. watering and chemical wetting agents on stockpiles for fugitive sources) are utilised and the date they were first commissioned and/or either significantly modified, upgraded or replaced. Note that point, fugitive, controlled and uncontrolled sources should be included. Note also that, where there is more than one, all emission control technologies and/or management practices should be included for each source. Attach a separate sheet if there is insufficient space in the table below.

Emission Source Name	Stack/Vent Number ^a	Control Technology	Reduction Efficiency (%)	Date First Commissioned ^{b,d}	Date Significantly Modified, Upgraded or Replaced ^{c,d}

a Insert "NA" (not applicable) for fugitive sources

b Include the earliest date (i.e. day, month and year) that either:

- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was "First Commissioned", if this information is not available.

c Include the earliest date (i.e. day, month and year) that either:

- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) or modification to an existing development consent was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application or variation to an existing licence was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was "Significantly Modified, Upgraded or Replaced", if this information is not available.

d Include codes PCA, EP&A and POEO beside date to denote Pollution Control Act 1970, Environmental Planning and Assessment Act 1979 and Protection of the Environment Operations Act 1997 respectively, where relevant

Fuel Combustion

Q23. If combustion devices (e.g. see below) are utilised by the facility, please specify their characteristics in the table below). Please read the footnotes. Attach a separate sheet if there is insufficient space in the table below.

Type of Combustion Device	Stack/Vent Number	Rated Capacity (kW)	Fuel Type ^a	Estimated Annual Fuel Consumption (either tonnes, litres, cubic metres or MJ)	Emission Control(s) ^b	Control Efficiency (%)

^a If the fuel type is an oil, please indicate the type of oil (e.g. residual, distillate, No.6 Residual Oil).

^b Emission controls include flue gas controls such as baghouses and scrubbers as well as the use of combustion related controls such as low NO_x burners. If more than one control device is used, please number the controls and place a corresponding control efficiency for each numbered control in the adjacent column (e.g. with "(1) baghouse, (2) scrubber" entered into the "Emission Control(s)" column, the adjacent column would read "(1) 99%, (2) 80%". for the corresponding control efficiencies).

Combustion Types

External Combustion		Internal Combustion
Boiler - dry bottom - wall fired	Spreader stoker	Gas turbine
Boiler - dry bottom - tangentially fired	Overfeed stoker	4-stroke lean burn
Boiler - dry bottom - cell burner fired	Handfed unit	4-stroke rich burn
Boiler - wet bottom - wall fired	Fluidised bed combustor - circulating	2 stroke lean burn
Boiler - wet bottom - tangentially fired	Fluidised bed combustor - bubbling	
Boiler - wet bottom - cell burner fired	Space heater	
Boiler (other)	Fuel cell/Dutch oven	
Cyclone furnace		

Q24. Please provide source specific emission estimates for any point sources at the facility in the table below. Please indicate any available information on stack properties (e.g. location, height, diameter, exit velocity) even if no emissions data are available. Attach a separate sheet if there is insufficient space in the table below.

	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number
STACK DETAILS:						
Stack Identification						
Emission Source ID (please use ID number used in Q22 and Q23) ^a						
Stack Location Easting (MGA) (km)						
Stack Location Northing (MGA) (km)						
Stack height (m)						
Stack internal diameter @ exit (m)						
Gas discharge velocity (m/s) @ discharge temperature						
Gas discharge volume (m ³ /s) @ discharge temperature						

EMISSION COMPONENTS (kg/year):

Total Solid Particulates						
PM ₁₀						
CO						
NO						
NO ₂						
SO ₂						
SO ₃						
VOCs ^b						
Lead						
Formaldehyde						
Benzene						
Toluene						
Benzo(α)pyrene or PAHs						
Isomers of xylene						
Other (please specify)						

a Please use the same naming convention as used for Q22 and Q23 (where applicable).
 b If the species-specific composition of total VOCs is known, please attach this information separately.

Q25. If the emissions of any of the sources specified in Q22-Q24 vary from the operating regime of the facility, described in Q8-Q12, please describe this variation below.

Q26. Please indicate the following information for any fuel or organic liquid storage tanks at the facility. All volumes should be expressed in kilolitres (kL). Attach a separate sheet if there is insufficient space in the table below.

Tank Type (please tick)		Capacity (kL)	Material Stored (e.g. petrol, diesel, LPG, acetone)	Estimated Loss (if known) (kL)	Filling Method (i.e. splash loading, submerged loading or bottom loading) ^b	During filling tanks, are the vapours displaced from the tank vented directly to the atmosphere or are they returned to the filling tanker?	Annual Throughput (kL/y)	Please specify any emission control measures utilised on the tanks ^c
Above Ground ^a	Below Ground							

- a If any above ground tanks are present, please indicate whether the tank design is fixed roof, floating roof (internal or external), or a pressure tank.
- b *Submerged Filling*: The liquid enters the tank from the top of the tank, freefalling and splashing to the bottom of the tank;
Submerged Filling: The liquid enter the tank via a pipe which reaches down to the bottom of the tank, allowing the end of the pipe to become submerged shortly after filling commences; and *Bottom Loading*: The liquid is filled via a pipe that enters through the bottom of the tank. For gas filled tanks please indicate "NA".
- c Emission controls may include devices such as secondary seals (for above ground tanks), vapour recovery units (VRUs) and/or activated carbon filters used on the storage tank vents to minimise breathing and filling releases. Indicate the control efficiency where possible.

Q27. Please provide (attach to the questionnaire) fuel speciation profiles for fuels used at the facility.

Q29. Do you have an on-site wastewater treatment system? If so, please provide the following data:

VOC emissions to air estimate from wastewater treatment: _____
kg/year

Please specify method of calculation:

Please estimate the annual volume of wastewater treated (i.e. megalitres/year)

_____ ML/yr

Please estimate the minimum, maximum and average Biological Oxygen Demand (BOD) of wastewater as received by the treatment plant (i.e. influent BOD).

_____ kg/m³ (min)

_____ kg/m³ (max)

_____ kg/m³ (annual average)

On-Site Vehicles

Q30. Please specify the following information pertaining to vehicles used for ON-SITE operations as best as possible (please read the footnotes beneath the table). Attach a separate sheet if there is insufficient space in the table below.

Type of vehicle ^a	Vehicle model year	Number of vehicles of this type operating	Fuel type (Petrol, diesel, LPG)	Engine Size (or power rating – kW or HP)	ON-SITE operating regime (e.g. 6am – 6pm, Monday to Friday) ^b	Typical operating hours per day	Number of operating days per year	Annual ON-SITE VKT per vehicle (km) ^{c, d}	% of VKT on PAVED roads (%) ^{c, d}	% of VKT on UNPAVED roads (%) ^{c, d}

- a Covers Off-Road vehicles only. Off-Road vehicles typically are not registered with the Road and Traffic Authority (RTA) because they do not access the road network. Some may have Conditional Registrations with the RTA, when it requires limited access to the road network. Example: front end loader, grader, bulldozer, fork lifts.
- b Please characterise the ON-SITE operating regime if it differs to that described in Q8 – Q12.
- c It is important to ensure that only ON-SITE operations are considered when providing these data.
- d VKT = Vehicle Kilometres Travelled (km). Provide these data on a 'per vehicle' basis (i.e. so the TOTAL VKT's for a particular vehicle type will be the 'number of vehicles' by the 'VKT's' for each vehicle). This data only needs to be approximate.

Q31. Please specify the total fuel consumed by on-site vehicles:

Petrol: _____ kL/year
 Diesel: _____ kL/year
 LPG: _____ m³/year

Q33. Please specify any other activities leading to airborne emissions that have not been considered already in this questionnaire. If any estimates of emissions have been performed by the facility (e.g. fugitive emissions such as solvent loss, particulates from blasting) please present them in the following table. Attach a separate sheet if there is insufficient space in the table below.

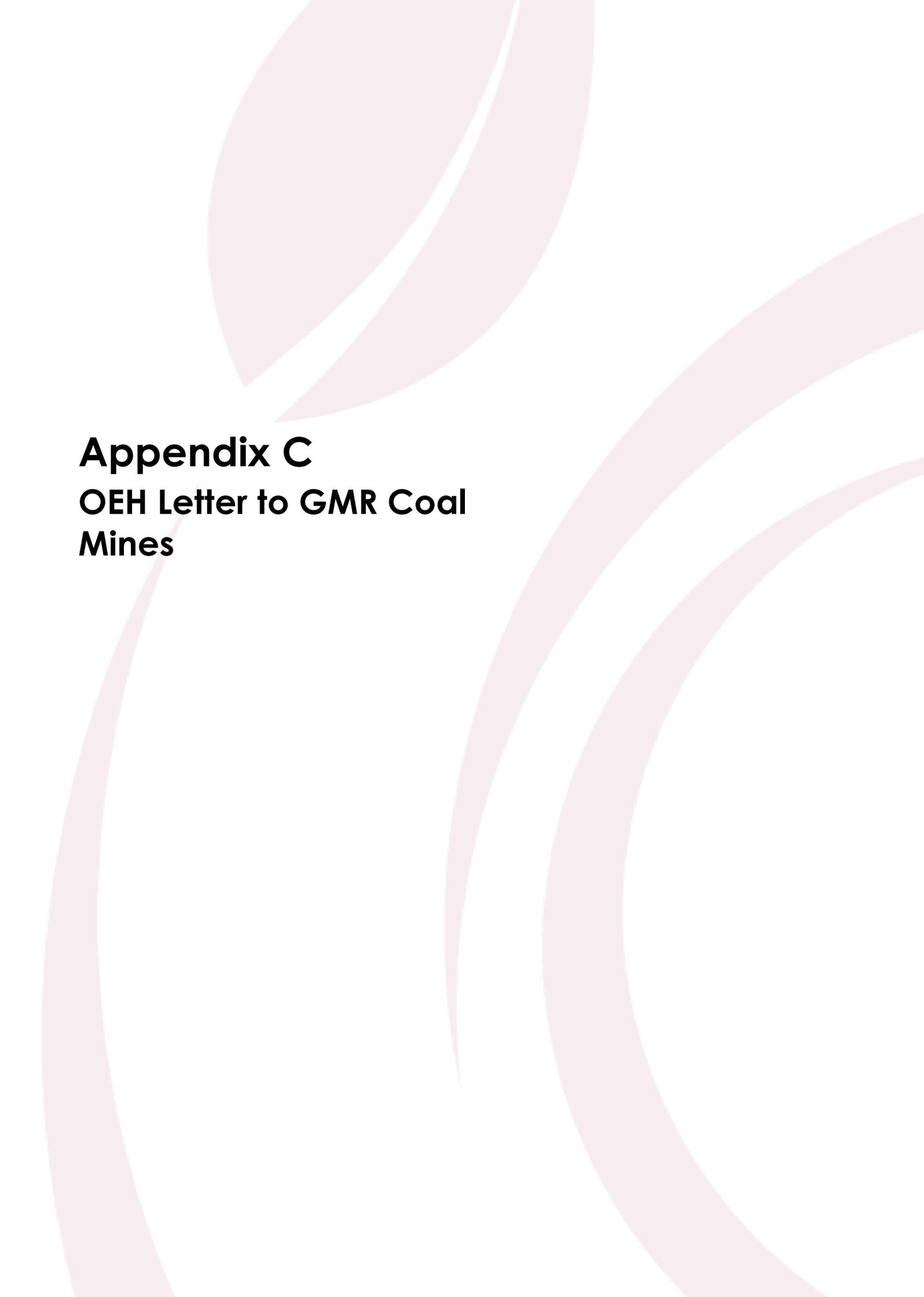
Activity	Pollutant Emitted	Emission Estimate ^a

^a Please specify the units of measurement, as well as the method used to estimate the emission (e.g. source testing, mass balance).

Q34. Please estimate the annual electricity consumption at the facility (MWh):

Q35. Please provide any site-specific emission estimates (by source) not already covered by this questionnaire and air emission test data (please attach to the completed questionnaire):

Q36. Any additional comments relating to this questionnaire.



Appendix C
OEH Letter to GMR Coal
Mines

Your reference: -
Our reference: DOC10/27492 & FIL10/3820
Contact: Nick Agapides, 02 9995 6047

«Title» «GivenName» «Surname»
«JobTitle»
«APName»
«APStreet»
«APSuburb» «APState» «APPostCode»

Dear «Title» «Surname»

5 July 2010

**INDUSTRY INFORMATION REQUEST -
REVIEW OF INTERNATIONAL BEST PRACTICE MEASURES TO PREVENT AND/OR
MINIMISE PARTICLE EMISSIONS FROM COAL MINING**

**COMPANY NAME: «APName»
PREMISES NAME: «Facility»
ENVIRONMENT PROTECTION LICENCE NUMBER: «NSWLicenseNo»**

The NSW Department of Environment, Climate Change and Water (DECCW) has commenced an environmental review of the NSW coal mining industry that aims to benchmark the performance of the coal mining industry against international best practice measures to prevent and/or minimise particle emissions. DECCW briefed the NSW Minerals Council on this project on Friday 2 July 2010. I am writing to seek your assistance with key elements of this review.

As you are aware, there is growing community concern regarding both the health and amenity impacts associated with particle emissions from coal mining, especially in the Hunter Valley. According to the DECCW air emissions inventory¹, coal mining is the largest man-made emitter of PM₁₀ in the NSW Greater Metropolitan Region (GMR) and third largest emitter of PM_{2.5}.

DECCW has recently contracted Katestone Environmental to complete the review according to the technical brief included at Attachment 1. The broad objectives of the study are to:

- Establish existing practices for minimising particle emissions from NSW coal mines and benchmark them against international best practice; and
- Estimate the likely reduction in particle emissions and costs associated with adopting those international best practice measures which are technically feasible at NSW coal mines.

The study provides DECCW and the coal mining industry an opportunity to identify new opportunities for reducing particle emissions from coal mines.

¹ <http://www.environment.nsw.gov.au/air/airinventory.htm>

The review will include the following components:

- Literature review;
- Written request for information from each EPA-licensed NSW coal mine;
- Internet survey of each relevant NSW coal mine, other Australian and International coal mines; and
- Site visits to approximately twelve NSW coal mines,

Plainly, the latter three items require your support to ensure the study accurately characterises measures currently being used to mitigate air pollution at existing NSW coal mines.

It is proposed that the detailed written request and internet survey will be mailed to you by Katestone Environmental on «SendDate» and a 3 week timeframe will be provided for submitting the necessary information by «ReceiveDate». The key aims of the written request are to identify major sources of particle emissions and existing management practices at NSW coal mines. In order to quantify emissions from each major source, it is proposed that each mine provides the detailed particle emission calculations which underpin the most recent National Pollutant Inventory (NPI) data published for the 2008/09 reporting year. To establish existing management practices, it is expected that each mine will provide, for example, relevant environmental management plans (EMPs), annual environmental management reports (AEMRs) and environmental audit reports, where available. The primary purpose of the internet survey is to assist with the identification of best practices currently adopted at NSW coal mines. The internet survey will be sent to your nominated representative by email for completion.

Site visits are proposed to be conducted between «MineVisitStart» and «MineVisitEnd». Site visits are proposed for approximately twelve NSW coal mines to gather additional information about existing practices at NSW coal mines. Sites will be selected using an objective prioritisation scheme that will consider the size and type of operation, emissions, air quality measurements, location, complaints, distance to receptors and population density. Should your mine be selected for a site visit, Katestone Environmental will separately contact you to make arrangements.

Your assistance in providing an accurate and timely response to Katestone Environmental's written request, internet survey and site visit request would be greatly appreciated, and is essential to ensure the most economic and environmentally effective air quality management and regulatory responses are developed and canvassed with all stakeholders.

As discussed at the meeting with the NSW Minerals Council on Friday 2 July 2010, your preliminary feedback on the report format will be sought at the appropriate time through the NSW Minerals Council.

If you need to discuss any matters in relation to the review, please contact DECCW's Mr. Nick Agapides, Manager Major Air Projects on (02) 9995 6047 or Nick.Agapides@environment.nsw.gov.au.

Yours sincerely

GREG SULLIVAN
Deputy Director General
Environment Protection and Regulation

Enclosure: Technical Brief – International Best Practice Measures to Prevent and/or Minimise Particle Emissions from Coal Mining
cc: Ms Sue-Ern Tan, Deputy Chief Executive Officer, NSW Minerals Council, PO Box A244, Sydney South, NSW 1235, Australia.

INTERNATIONAL BEST PRACTICE MEASURES TO PREVENT AND/OR MINIMISE PARTICLE EMISSIONS FROM COAL MINING

TECHNICAL BRIEF

The Department of Environment, Climate Change and Water NSW (DECCW) is undertaking a major review of the management of particle emissions from coal mining in the Hunter Valley. As part of this review, DECCW is commissioning a study to identify international best practice measures to prevent and/or minimise particle emissions from coal mining in the Hunter Valley.

1. OBJECTIVE

The objectives of the study are to:

- Review international best practice measures to prevent and/or minimise particle emissions from all activities associated with NSW coal mines, including land rehabilitation.
- Compare international best practice measures to prevent and/or minimise particle emissions with those currently used at NSW coal mines.
- Make recommendations regarding the adoption of international best practice measures that could be practicably implemented in NSW at existing and proposed coal mines.
- Estimate the likely reduction in particle emissions associated with adopting each international best practice measure at NSW coal mines.
- Estimate the costs associated with adopting each international best practice measure at NSW coal mines.

2. BACKGROUND INFORMATION

There is growing community concern regarding both the health and amenity impacts associated with particle emissions from coal mining in the Hunter Valley. Many recent scientific studies have confirmed that exposure to particles are associated with health risks.

The coal mining industry is the:

- Largest industrial emitter of PM₁₀ in the NSW Greater Metropolitan Region (GMR), emitting 25,256 tonne of PM₁₀ per year, or 33.6% of anthropogenic emissions²; and
- Third largest emitter of PM_{2.5} in the GMR, emitting 4,154 tonne of PM_{2.5} per year, or 13.6% of anthropogenic emissions¹.

The *Protection of the Environment Operations Act 1997* (POEO Act) is the key piece of environment protection legislation administered by the Environment Protection Authority (EPA), which is part of DECCW.

The POEO Act establishes a system of environment protection licensing for 'scheduled' activities with the potential to have a significant impact on the environment. Schedule 1 of the POEO Act lists those scheduled activities, which are licensed by the EPA. A coal mine is declared to be a scheduled activity if:

- (a) it has a capacity to produce more than 500 tonnes of coal per day; or
- (b) it has disturbed, is disturbing or will disturb a total surface area of more than 4 hectares of land.

² Air Emissions Inventory for the Greater Metropolitan Region in NSW
<http://www.environment.nsw.gov.au/air/airinventory.htm>

Part 5.4 (sections 124–135) of the POEO Act deals specifically with air pollution from EPA-licensed premises. This includes the general obligation that the occupier of a premises must:

- not cause air pollution by failing to operate or maintain plant, carry out work or deal with materials in a proper and efficient manner (sections 124–126); and
- operate any plant by such practicable means as may be necessary to prevent or minimise air pollution (section 128).

3. SCOPE OF WORK

DECCW is seeking advice on:

- Best practice measures used internationally to prevent and/or minimise particle emissions from all activities associated with NSW coal mines.
- How international best practice measures to prevent and/or minimise particle emissions compare with those currently used at NSW coal mines.
- The international best practice measures that could be practicably implemented in NSW for existing and proposed coal mines.
- The likely reduction in particle emissions associated with adopting each international best practice measure at NSW coal mines.
- The costs associated with adopting each international best practice measure at NSW coal mines.

4. TASKS FOR THE CONSULTANT

- Identify the major sources of particles from coal mines (i.e. TSP, PM₁₀ and PM_{2.5}) and rank them in descending order of significance for offsite impacts.
- Identify current operational practices and/or emission controls for minimising particle emissions from coal mining in the Hunter Valley. In identifying current operational practices and/or emission controls, the consultant will visit a representative sample of operational open-cut coal mines in the Hunter Valley.
- Research and identify international best practice to prevent and/or minimise particle emissions from all activities associated with coal mining including land rehabilitation. This may involve site visits to relevant interstate and overseas mines.
- Evaluate the practicality of implementing best practice identified in 2. at coal mines in the Hunter Valley. The NSW Minerals Council and a representative sample of operational open-cut coal mines in the Hunter Valley are to be consulted as part of the evaluation. The reasoning behind all findings of the evaluation is to be clearly stated.

The consultant should liaise with DECCW at the start of the project to discuss the tasks to be completed.

5. DELIVERABLES

- A draft report covering all of the points defined in the Scope of Work.
- A final report covering all of the points defined in the Scope of Work.
- A presentation of the final report to DECCW.

The final report must include:

- An executive summary written in plain English;
- A detailed report addressing the objectives of the study as outlined above; and
- Recommendations.

Electronic reports need to be submitted in Microsoft Word 2003 and Acrobat compatible formats, while electronic data needs to be submitted in Microsoft Excel 2003 and Microsoft Access 2003 compatible format.

6. PROJECT MANAGEMENT

6.1. Timeframes and Milestones

Milestones and progress payments are detailed below:

- Milestone 1: Agreement on scope of work and commencement of study (40% progress payment on Monday 14 June 2010).
- Milestone 2: Delivery of draft report addressing objectives and scope of work to the satisfaction of DECCW (30% progress payment on Monday 2 August 2010).
- Milestone 3: Delivery/presentation of final report addressing objectives and scope of work to the satisfaction of DECCW (final 30% payment on Monday 16 August 2010).

With each request for payment, the consultant should submit a consolidated progress report covering the items in Section 6.2. Progress Reports.

6.2. Progress Reports

Brief progress reports are required to be submitted to the DECCW project officer by C.O.B. on Friday every week. The progress reports must be emailed to the project officer and include the following details:

- Tasks undertaken in the last week and personnel responsible for the task.
- Tasks planned for the next week and personnel responsible for the task.
- Any outstanding information/new issues.
- Meetings held / planned (inc. dates) (External / Internal).
- Budgetary issues / changes to scope / schedule issues.

6.3. Contract

The successful consultant will be required to sign a standard DECCW consultancy contract (“the Agreement”). All major changes in direction of the project need to be confirmed in writing by the consultant keeping a running log of all changes requested and confirmed.

7. PROJECT BUDGET

The indicative budget for this work is \$100,000 (exclusive of GST)

8. REQUIREMENTS FOR SUBMITTING A TENDER

In providing a proposal for this work, please provide a submission including:

- A brief summary of your relevant experience in this area;
- A detailed summary of your relevant experience in this area;
- A detailed discussion of the approach to the study and methods that will be used;
- CVs for the consultant(s) who would conduct the work;
- Detailed work plans including timetables for delivering outputs;
- Demonstrated understanding of the requirements of the consultancy (including any proposed variations or innovations);
- Proposed timetable (including the availability of key personnel);
- Proposed budget;
- Documentation of previous relevant experience;
- Names of relevant referees; and
- Declaration of any conflict of interest or risk of conflict of interest.

9. TENDER EVALUATION CRITERIA

The selection criteria used to award this tender will be:

- Quality of the proposed method and approach to the project;
- Experience in similar tasks and/or demonstrated capacity to undertake the project;
- The relevant expertise of the proposed consultants;
- Ability to perform the work within the timeframe;
- Value for money; and
- High level of report writing and communication skills.

10. LODGEMENT OF TENDER

Proposals must be lodged in hard copy format in triplicate to:
The Tender Box
Department of Environment, Climate Change and Water
Level 14, 59-61 Goulburn Street
SYDNEY NSW 2000

Proposals must also be lodged via email to:

Nick.Agapides@environment.nsw.gov.au.

All proposals should be marked to the attention of:

Nick Agapides

Manager Major Air Projects

Air Policy Section

Climate Change, Policy and Programs Group

Department of Environment, Climate Change and Water NSW

Tenders must be received by 10:00 am, Friday 21 May 2010.

Further Information:

Nick Agapides

Manager Major Air Projects

Air Policy Section

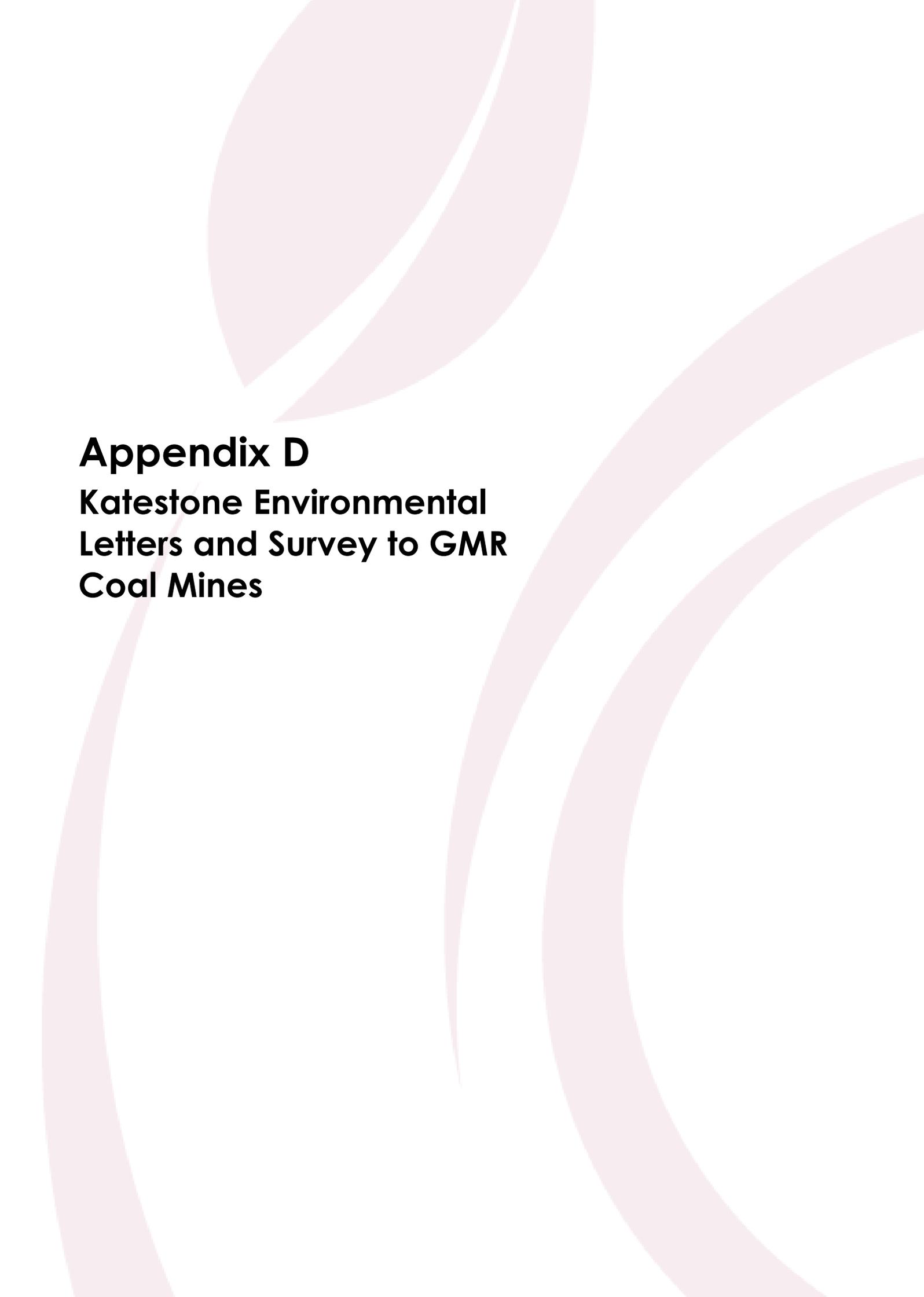
Climate Change, Policy and Programs Group

Department of Environment, Climate Change and Water NSW

Telephone: 02 9995 6047

Facsimile: 02 9995 5938

Email: Nick.Agapides@environment.nsw.gov.au



Appendix D
Katestone Environmental
Letters and Survey to GMR
Coal Mines



katestone
environmental

Expert | Advice | Air

8 July 2010

«Title» «Givenname» «Surname»
«Jobtitle»
«Apname»
«Apstreet»
«Apsuburb»
«APState» «APPostCode»

Re: Industry information request – review of International Best Practice Measures to Prevent and/or Minimise Particle Emissions from Coal Mining

«Facility»

Dear «GivenName»,

The NSW Department of Environment, Climate Change and Water (DECCW) has commenced an environmental review of the NSW coal mining industry that aims to benchmark the performance of the coal mining industry against international best practice measures to prevent and/or minimise particle emissions.

DECCW has contracted Katestone Environmental to complete the review with the following broad objectives:

- Establish existing practices for minimising particle emissions from NSW coal mines and benchmark them against international best practice
- Estimate the likely reduction in particle emissions and costs associated with adopting those international best practice

I am writing to seek your assistance with the following key elements of the review. These are outlined below. Your response is requested to be provided by Thursday 29 July 2010.

Detailed NPI data for the 2008/09 reporting year

A key aim of the study is to identify major sources of dust emissions from coal mines and to rank those sources for their potential to cause offsite impacts. In order to quantify emissions from major sources, Katestone Environmental requests that you provide the emission rates of TSP, PM₁₀ and PM_{2.5} for each NPI defined dust producing activity for the 2008/09 NPI reporting year.

If your mine used the Minerals Council spreadsheet to quantify dust emissions for NPI reporting in the 2008/09 reporting year, the provision of a copy of this spreadsheet is an appropriate response to this request.

Similarly, if an external consultant or site-specific methodology was adopted, a summary report or table covering the NPI defined activities would be a sufficient response. Please forward this information to the email address or postal address shown below.

Internet survey

An internet survey will be conducted to identify operational practices and emission controls that are currently adopted coal mines operating in NSW. The secure link to the internet survey will be emailed to your nominated representative. Please forward the email address of your nominated representative to the email address shown below by 15 July 2010.

Environmental/dust management plans

To establish existing management practices, Katestone Environmental requests that you provide current versions of the following documents, where available:

- environmental or dust management plans
- annual environmental management reports (AEMR)
- environmental audit reports.

Katestone Environmental has obtained AEMR and some environmental management plans from the websites of some NSW coal mines. If the documents cited above are available on your website, simply send the web address of those documents to the email address shown below. Alternatively, paper copies of reports can be sent to the postal address shown below.

Site visits to selected mines

Site visits are proposed to be conducted between 19 July 2010 and 30 July 2010. Site visits will be conducted to gather additional information about existing practices at NSW coal mines. Sites will be selected using an objective prioritisation scheme that will consider the size and type of operation, emissions, air quality measurements, location, complaints, distance to receptors and population density. Should your mine be selected for a site visit, you will be contacted so that arrangements can be made for the visits.

Your assistance in providing an accurate and timely response to this request is greatly appreciated. Please contact the undersigned if you need to discuss any matters relating to this review.

Please send your relevant information to:

environmental@katestone.com.au

Or:

PO Box 2217
Milton QLD. 4064
Australia

Yours sincerely,



Simon Welchman – Director



katestone
environmental

Expert | Advice | Air

22 February 2011

«Title» «Givenname» «Surname»
«Jobtitle»
«Apname»
«Apstreet»
«Apsuburb»
«APState» «APPostCode»

Re: Industry information request – review of International Best Practice Measures to Prevent and/or Minimise Particle Emissions from Coal Mining

«Facility»

Dear «GivenName»,,

Katestone Environmental was commissioned by DECCW during June 2010 to conduct a review of coal mining activities in the Greater Metropolitan Region (GMR) of NSW. The final draft report was published on the Department of Environment, Climate Change and Water (DECCW) website (<http://www.environment.nsw.gov.au/air/coalminingNSW.htm>) on 23 December 2010 and comments were requested by 7 February 2011. The following information was used in the review to establish current techniques for controlling particulate matter emissions from coal mines in the GMR:

- DECCW industrial survey conducted in 2009, where 100% of all premises surveyed provided responses
- Katestone Environmental coal mine survey conducted in 2010, where 38% of all premises surveyed provided responses
- Katestone Environmental coal mine site visits to thirteen mines conducted in 2010
- documents published by coal mines such as Annual Environment Management Reports (AEMR), Environmental Management Plans (EMP) and Environmental Management Systems (EMS).

Katestone Environmental has been recommissioned by DECCW to survey those premises that did not provide responses to the coal mine survey in 2010 and update the final draft report accordingly. The coal mine survey is being conducted to identify operational practices and emission controls that are currently adopted at coal mines in the GMR. The secure link to the internet survey will be emailed to your nominated representative shortly, so it would be appreciated if you could forward the email address of your nominated representative to this email address (environmental@katestone.com.au) by 25 February 2011. You will be provided three weeks to complete the coal mine survey by 18 March 2011.

You have received this correspondence because you are the nominated representative on an Environment Protection Licence. If you are not the relevant person to receive such correspondence, please contact the undersigned on 07 3369 3699 or at the email address shown above.

Yours sincerely,

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

Simon Welchman - Director

Best Practice Measures to Prevent and/or Minimise Particle Emissions

The NSW Department of Environment, Climate Change and Water (DECCW) has commenced an environmental review of the NSW coal mining industry that aims to benchmark the performance of the coal mining industry against international best practice measures to prevent and/or minimise particle emissions.

As part of this study, the current operational practices and/or emission controls for minimising particle emissions from coal mining in NSW are being investigated.

This survey is designed to provide information on operational practices and emission controls for NSW coal mines.

Katestone Environmental appreciates the time you have taken to complete this survey. Your participation in this survey will be acknowledged in the final report of this project that will be presented to DECCW.

The information provided by you in this survey will be used to produce statistics about current practices that will be used in the final report.

The data supplied in this survey, will be treated as confidential. Responses will only be accessible by the team at Katestone Environmental undertaking this project.

If you have any questions please do not hesitate to contact:
Simon Welchman, Katestone Environmental 07 3369 3699

1. Facility Details

Name:	<input type="text"/>
Company:	<input type="text"/>
Title/Position:	<input type="text"/>
Mine/facility:	<input type="text"/>
Address:	<input type="text"/>
Environmental Protection Licence No.:	<input type="text"/>

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Coal production and material properties

2. Coal type

- Coking coal
- Thermal coal - low ash
- Thermal coal - high ash
- PCI
- Other (please specify)

3. Please specify the following tonnages for your mine/facility for the 2008/2009 financial year

Coking coal --- Product (Mt)	<input type="text"/>
Coking coal --- Rom (Mt)	<input type="text"/>
Thermal coal - low ash --- Product (Mt)	<input type="text"/>
Thermal coal - low ash --- Rom (Mt)	<input type="text"/>
Thermal coal - high ash --- Product (Mt)	<input type="text"/>
Thermal coal - high ash --- Rom (Mt)	<input type="text"/>
PCI --- Product (Mt)	<input type="text"/>
PCI --- Rom (Mt)	<input type="text"/>
Overburden removal (Mt)	<input type="text"/>
Reject coal (Mt)	<input type="text"/>

4. What is the total moisture content (%) of the following materials that are handled at your site?

Rejects	<input type="text"/>
Overburden	<input type="text"/>
Topsoil	<input type="text"/>
Coking coal - ROM	<input type="text"/>
Coking coal - Product	<input type="text"/>
Thermal coal low ash - ROM	<input type="text"/>
Thermal coal low ash - Product	<input type="text"/>
Thermal coal high ash - ROM	<input type="text"/>
Thermal coal high ash - Product	<input type="text"/>

* 5. Type of activity

Coal handling/processing facility only

Rehabilitation/care and maintenance only

Underground

Open cut

Underground and open-cut

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Open-cut pit

6. What methods of mining are employed in-pit to extract overburden

- Dragline
- Continuous miners
- Truck and shovel
- Blasting
- Other (please specify)

7. What methods of mining are employed in-pit to extract coal

- Dragline
- Continuous miners
- Truck and shovel
- Blasting
- Other (please specify)

8. What techniques are currently used at your site to manage dust emissions from draglines?

- Modify operations during hot and windy conditions
- Minimise drop height
- None
- Not Applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

9. What techniques are currently used at your site to manage dust emissions from blasting?

- Modify blasting activities during windy conditions
- Blasting mats
- Watering blast area before blasting
- Design blast to minimise fly-rock
- None
- Not applicable

Other (please specify)

10. What techniques are used to manage wind erosion of dust from exposed material in-pit

- Chemical dust suppressant
- Water cart
- None
- Progressive rehabilitation

Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Overburden dumps

11. What techniques are currently used at your site to manage dust emissions from unloading trucks at the overburden dump?

- Water sprays
- Water cart with boom spray
- None
- Other (please specify)

12. What techniques are used to manage wind erosion of dust from exposed material at overburden dumps

- Chemical dust suppressant
- None
- Wind break or silt fence
- Water cart
- Progressive rehabilitation

Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Transport of coal and waste

13. What method is used to transport coal from the pit or drift to the ROM pad?

- Trucks
- Conveyors

Other (please specify)

14. What method is used to transport overburden from the pit to out-of-pit waste dumps?

- Trucks
- Conveyors
- Not applicable

Other (please specify)

15. What techniques are currently used at your site to manage dust emissions from haul roads?

- Speed restrictions
- Sealing with bitumen
- Regrading
- Watering using a water cart
- Watering using fixed sprays
- Chemical dust suppressant
- None
- Not applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

16. What techniques are currently used at your site to manage dust emissions from conveyors transporting coal or overburden to the ROM pad or waste dump?

- Watering using fixed sprays
- Chemical dust suppressant
- Wind shielding - roof
- Wind shielding - side wall(s)
- None
- Not applicable
- Other (please specify)

17. What techniques are currently used at your site to manage dust emissions from conveyor transfers?

- Full enclosure
- Enclosure with fabric filters
- Water sprays
- Chemical suppressants
- Partial enclosure
- Soft loading chutes
- None
- Not Applicable
- Other (please specify)

ROM pad

18. What techniques are currently used at your site to manage dust emissions from loading ROM stockpiles?

- Total enclosure
- Water sprays
- Overhead tripper with telescopic chute
- Variable height stacker
- None
- Not Applicable
- Other (please specify)

19. What techniques are currently used at your site to manage dust emissions from unloading ROM stockpiles?

- Water sprays
- Reclaim tunnel
- Bucketwheel reclaimer
- None
- Not Applicable
- Other (please specify)

20. What techniques are currently used at your site to manage dust emissions from wind erosion of ROM stockpiles?

- Water cart with boom spray
- Wind breaks/wind fence
- Chemical dust suppressant
- Water sprays
- None
- Not Applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

21. What techniques are currently used at the ROM pad to manage dust emissions from wind erosion of general site areas and access roads?

- Water cart with boom spray
- Wind breaks/wind fence
- Chemical dust suppressant
- Water sprays
- Truck wheel wash
- Vacuum truck
- None
- Not Applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Coal handling and processing plant

22. What techniques are currently used at your site to manage dust emissions from loading coal into the CHPP hopper?

- Total enclosure
- Water sprays
- None
- Not Applicable
- Other (please specify)

23. What methods are used to control dust emissions from dry processing of coal?

- Enclosure with fabric filter
- Enclosure
- Partial enclosure
- Not applicable

Other (please specify)

24. What techniques are currently used at the CHPP to manage dust emissions from wind erosion of general site areas and access roads?

- Water cart with boom spray
- Wind breaks/wind fence
- Chemical dust suppressant
- Water sprays
- Truck wheel wash
- Vacuum truck
- None
- Not Applicable
- Other (please specify)

Tailings dams

25. What techniques are currently used at your site to manage dust emissions from wind erosion of tailings dams?

- Water cart
- Wind breaks
- Chemical dust suppressant
- Water sprays
- Progressive rehabilitation
- None
- Not Applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Product coal load-out

26. What techniques are currently used at your site to manage dust emissions from wind erosion of product coal stockpiles?

- Water cart with boom spray
- Wind breaks/wind fence
- Chemical dust suppressant
- Water sprays
- None
- Not Applicable
- Other (please specify)

27. What techniques are currently used at your site to manage dust emissions whilst transferring product coal from stockpiles?

- Bucketwheel reclaimer
- Front end loader
- Reclaim tunnel and dozer push
- Water sprays
- None
- Not applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

28. What methods are used for loading product coal to trains or trucks for off-site transport?

- Loader in the open air
- Loader within building
- Batch weighing with loading by clamshell
- Batch weighing with loading by chute
- Volumetric loading by clamshell
- Volumetric loading by chute
- Not Applicable
- Other (please specify)

29. What techniques are currently used at your site to manage dust emissions from loading trains and/or trucks?

- Enclosure with fabric filters
- Partial Enclosure
- Water sprays
- None
- Not Applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

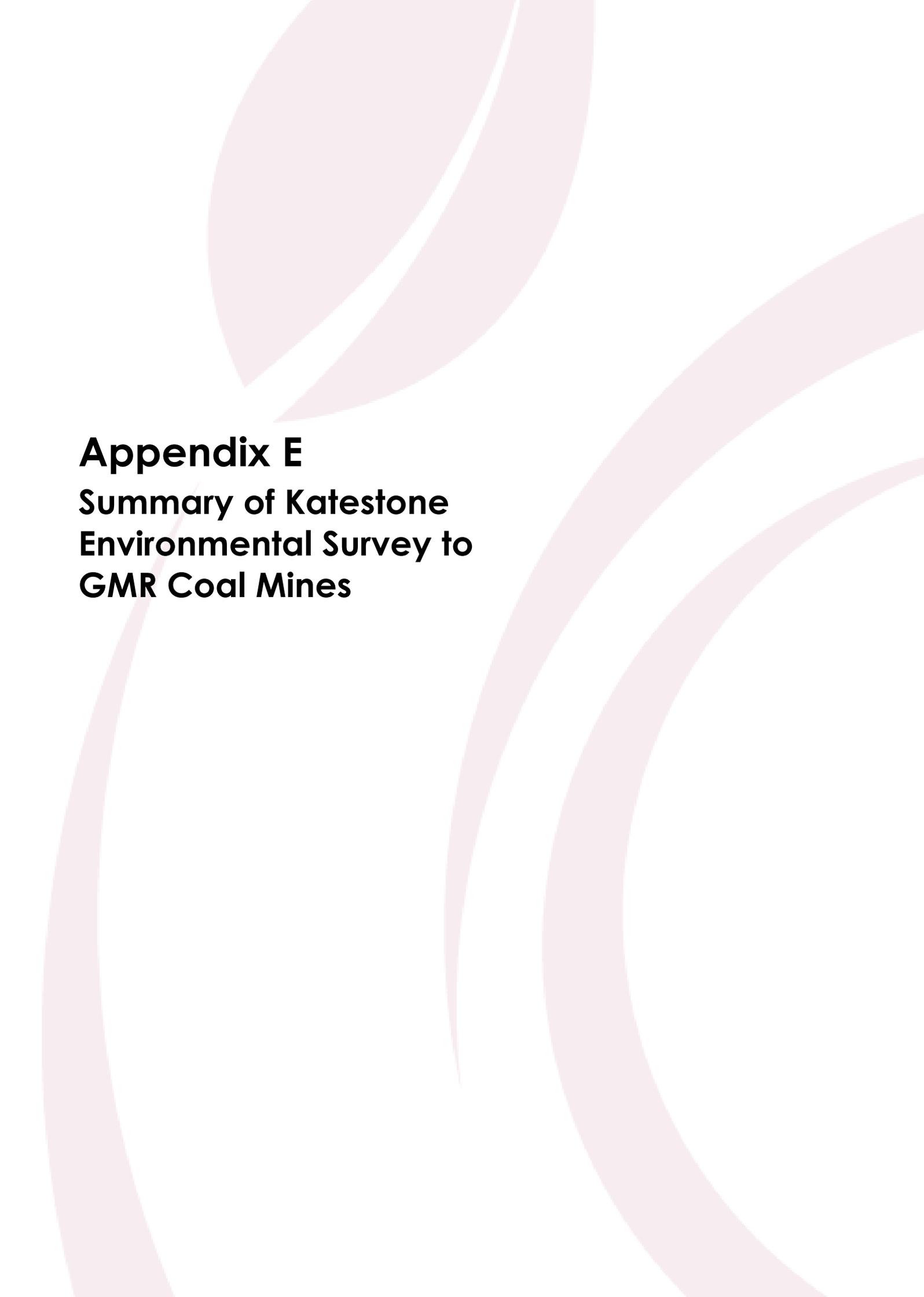
30. What techniques are currently used to manage dust during transport of coal?

- Apply dust suppressant to coal surface
- Cover load using tarp
- Profile coal surface in the wagons
- Maintain 100mm freeboard around the edge of the wagon
- Remove parasitic coal from surface of wagons before leaving the mine site
- Apply lids to wagons
- Truck wheel wash
- Wagon wheel wash
- None
- Not Applicable
- Other (please specify)

Best Practice Measures to Prevent and/or Minimise Particle Emissions

Thank you

Katestone Environmental appreciates the time that you have taken to participate in this survey.



Appendix E
Summary of Katestone
Environmental Survey to
GMR Coal Mines

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Appendix E Best Practice Measures to Prevent and or Minimise Particle Emissions from Coal Mining

Presented within this Appendix are the results of the survey conducted by Katestone Environmental of coal mines located within the NSW GMR. The survey titled, *Best Practice Measures to Prevent and or Minimise Particle Emissions from Coal Mining* was issued via the web to be completed by site managers or environmental officers. The results of the survey are summarised in the following sections.

E1 Coal Production and Material Properties

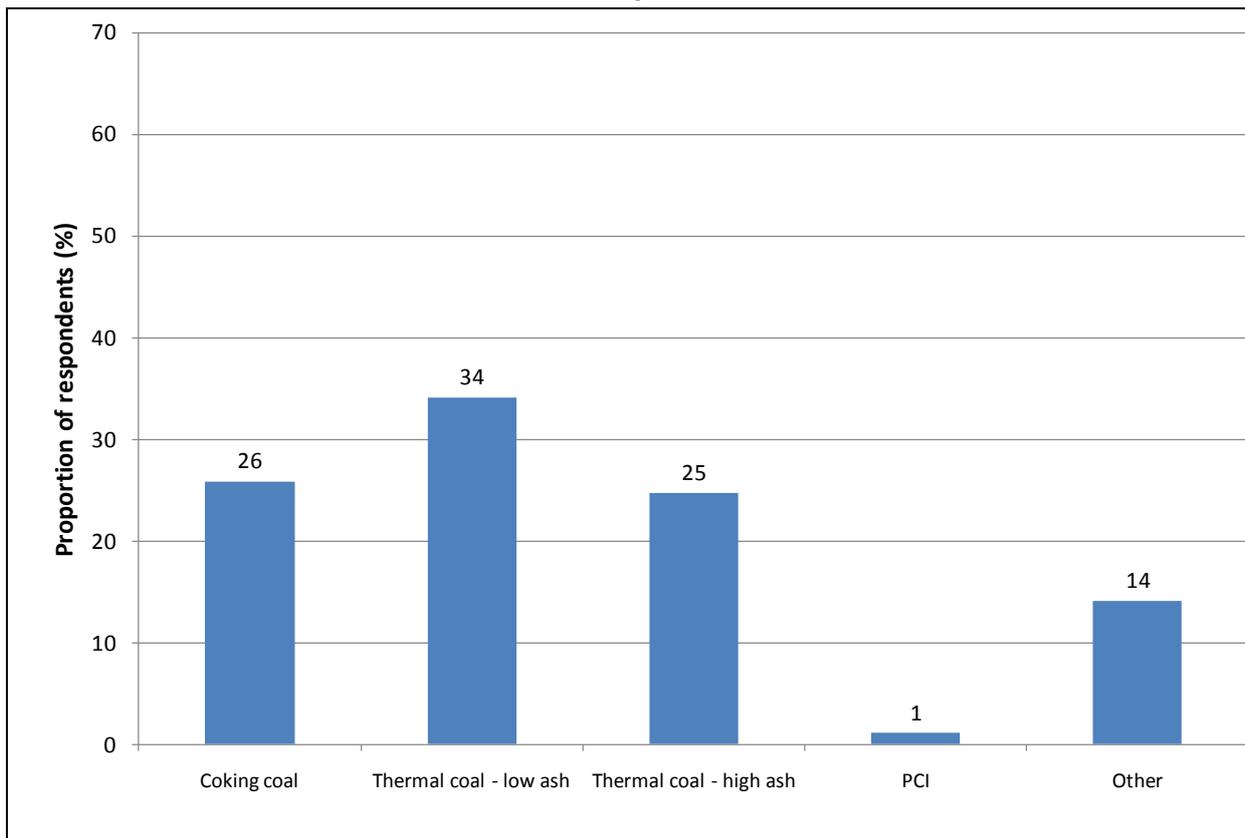


Figure E1 Survey Question 2, Coal type?

Total respondents:

54

Number of responses:

85

Type:

Bar Chart

Other Comments:

- 4 % Semi Soft Coking Coal
- 3% Coal Rejects
- Beneficiated Dewatered Tailings (BDT)
- Currently under Care & Maintenance since 2007
- Decommissioned Mine no operations or activities, site revegetated and rehabilitated
- Mine abandoned in 2002
- No production - colliery on "care and maintenance"
- Product coal ash limit of 21% ROM (domestic) and 16% once washed (export)

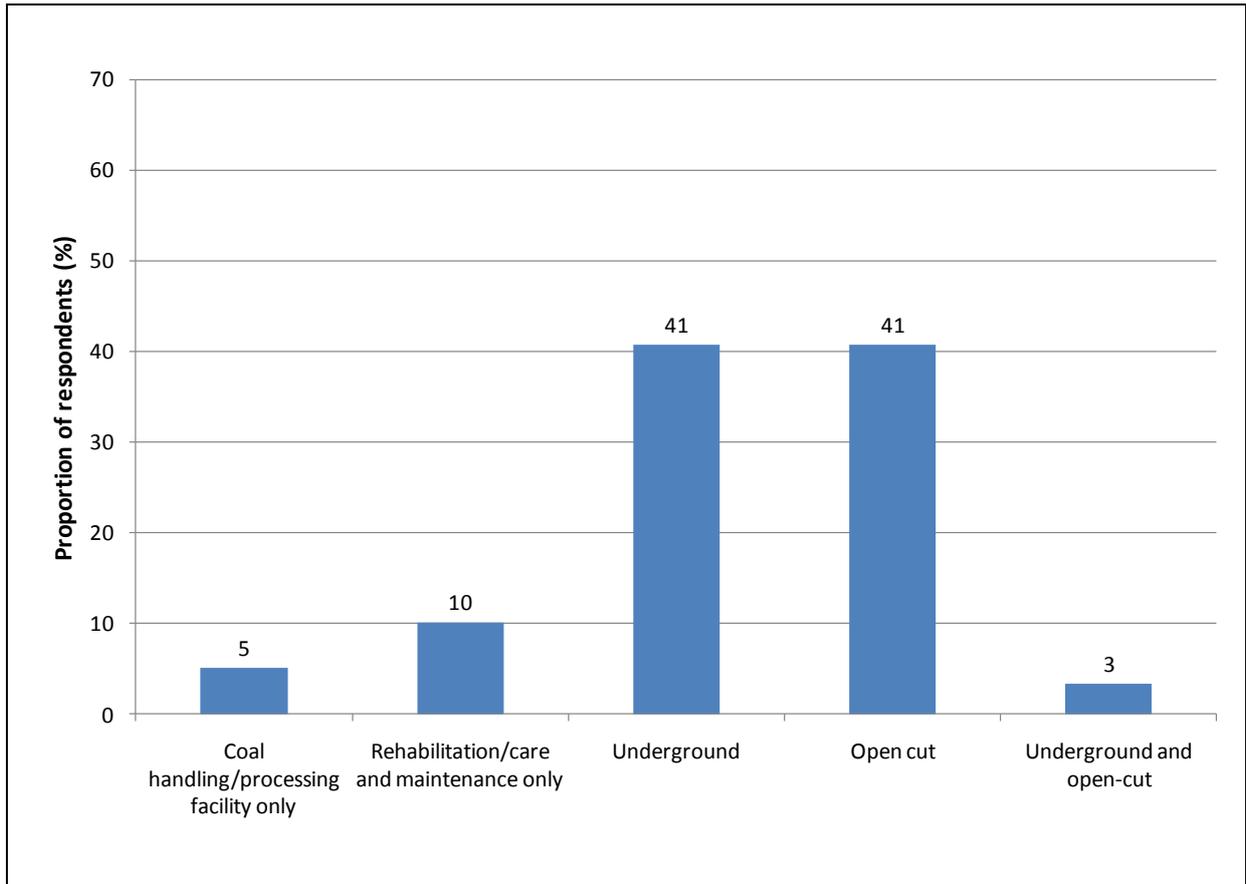


Figure E2 Survey Question 5, Type of activity?

Total respondents:

59

Number of responses:

59

Type:

Bar Chart

Other Comments:

n/a

E2 Open-cut pit

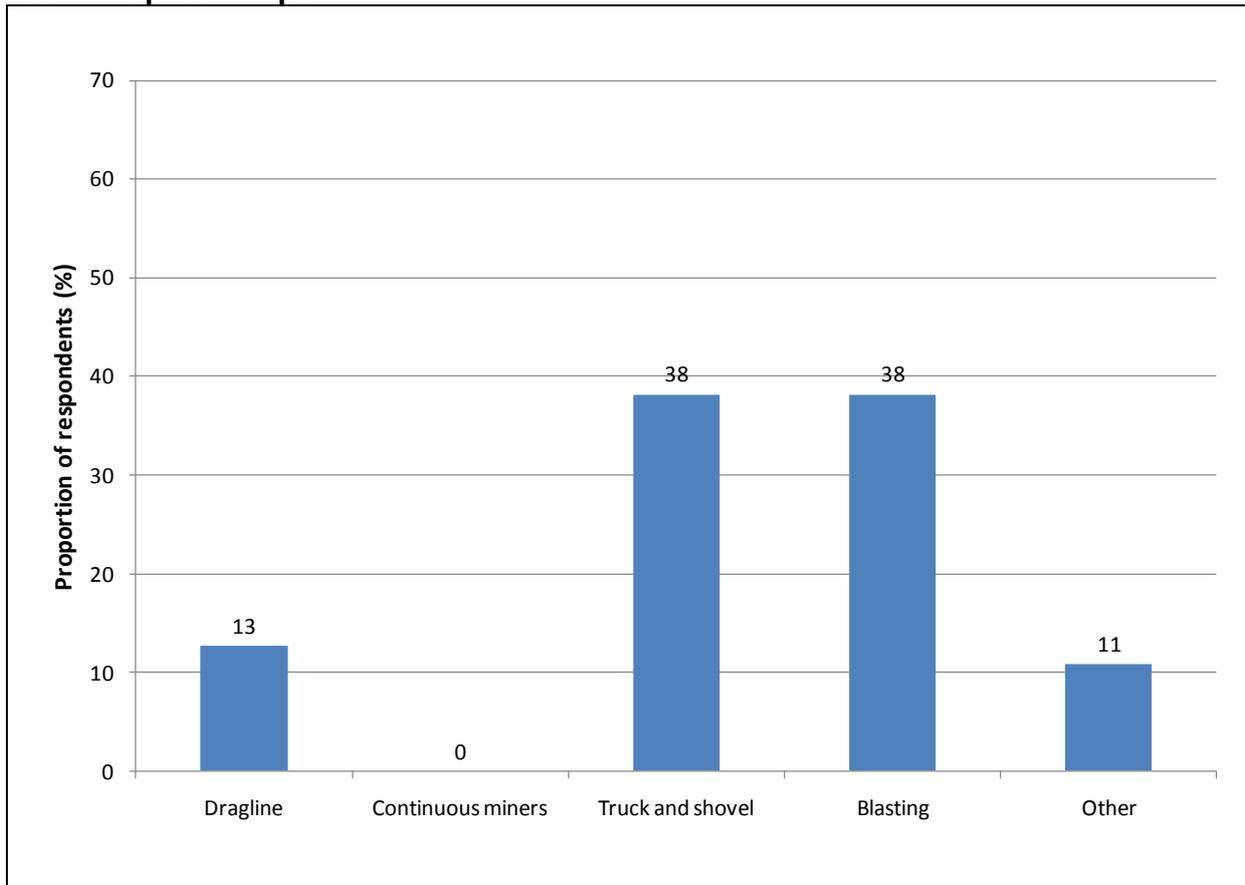


Figure E3 Survey Question 6, What methods of mining are employed in-pit to extract overburden?

Total respondents:

26

Number of responses:

55

Type:

Bar Chart

Other Comments:

- Dozer
- Excavator and Truck
- Hydraulic Excavator & Truck
- This area was a reject emplacement - A dozer removed all surface vegetation and then pushed up an area for an excavator to start extracting material.
- Truck and excavator

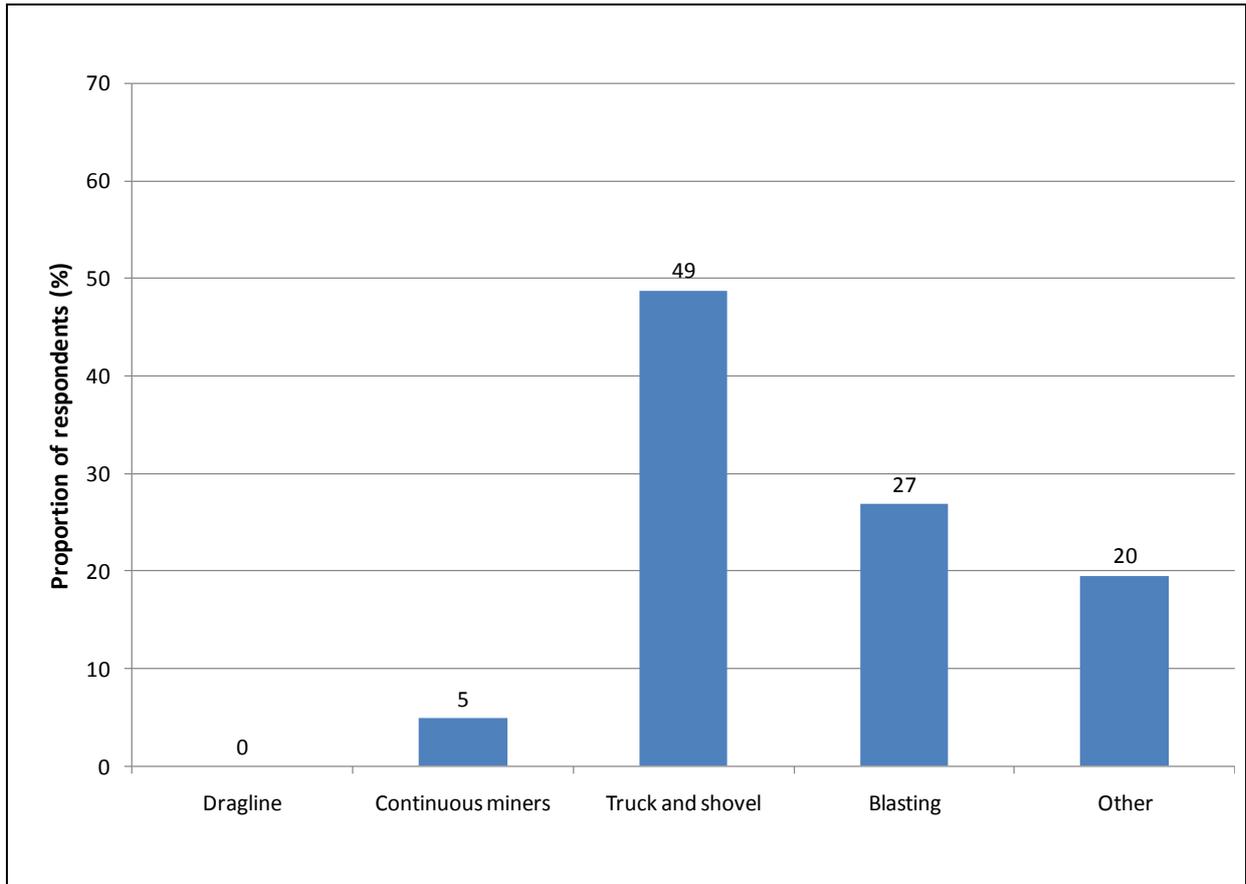


Figure E4 Survey Question 7, What methods of mining are employed in-pit to extract coal?

Total respondents: 26	Number of responses: 41	Type: Bar Chart
---------------------------------	-----------------------------------	---------------------------

Other Comments:

- Dozer
- Excavator
- FEK and EXCAVATORS
- Front end loader and truck
- Hydraulic Excavator & Truck
- Loader
- Truck and excavator. Blasting infrequently used for coal.

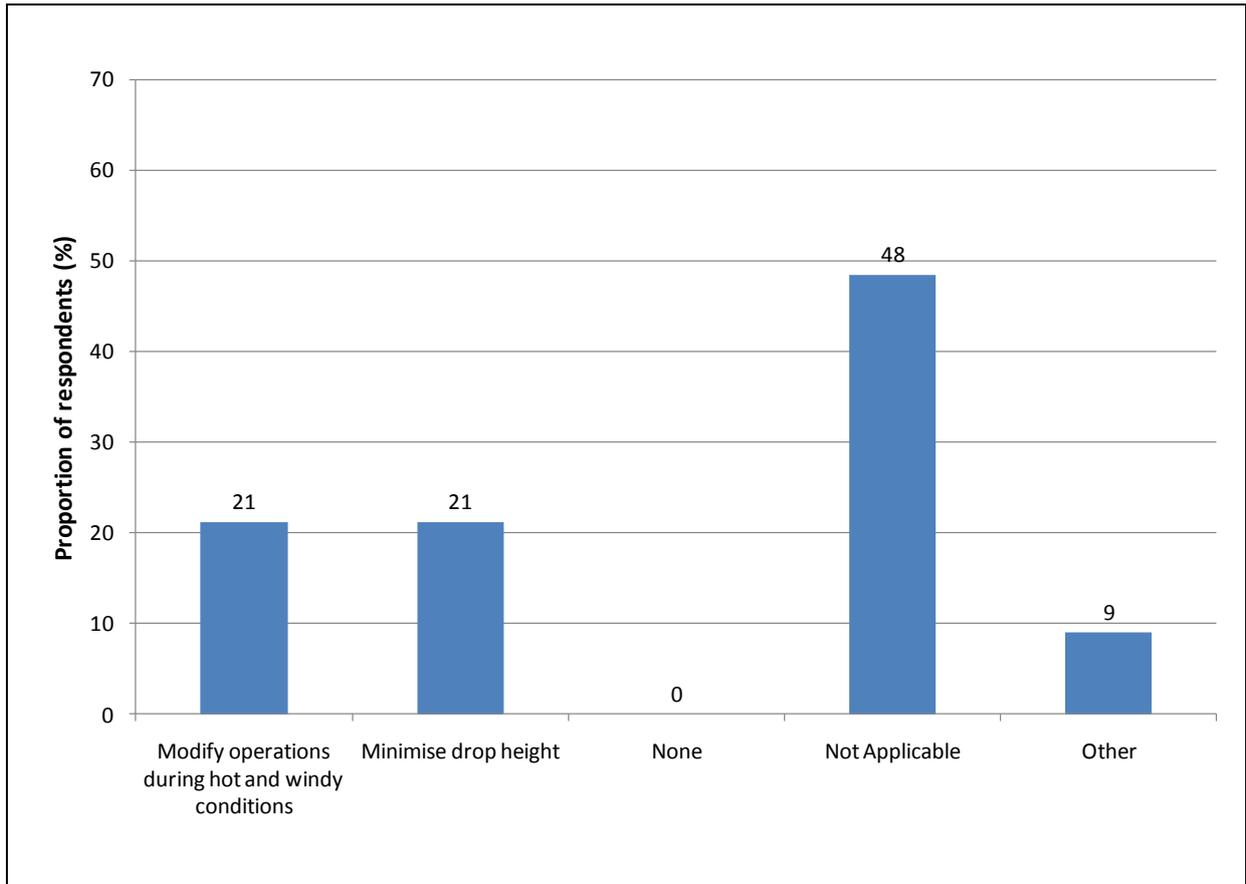


Figure E5 Survey Question 8, What techniques are currently used at your site to manage dust emissions from draglines?

Total respondents:

23

Number of responses:

33

Type:

Bar Chart

Other Comments:

- Cease operations in unfavourable conditions
- Environmental Procedures; Competency based training; alarms linked to real time monitors; stoppage; visual monitoring and routine inspection

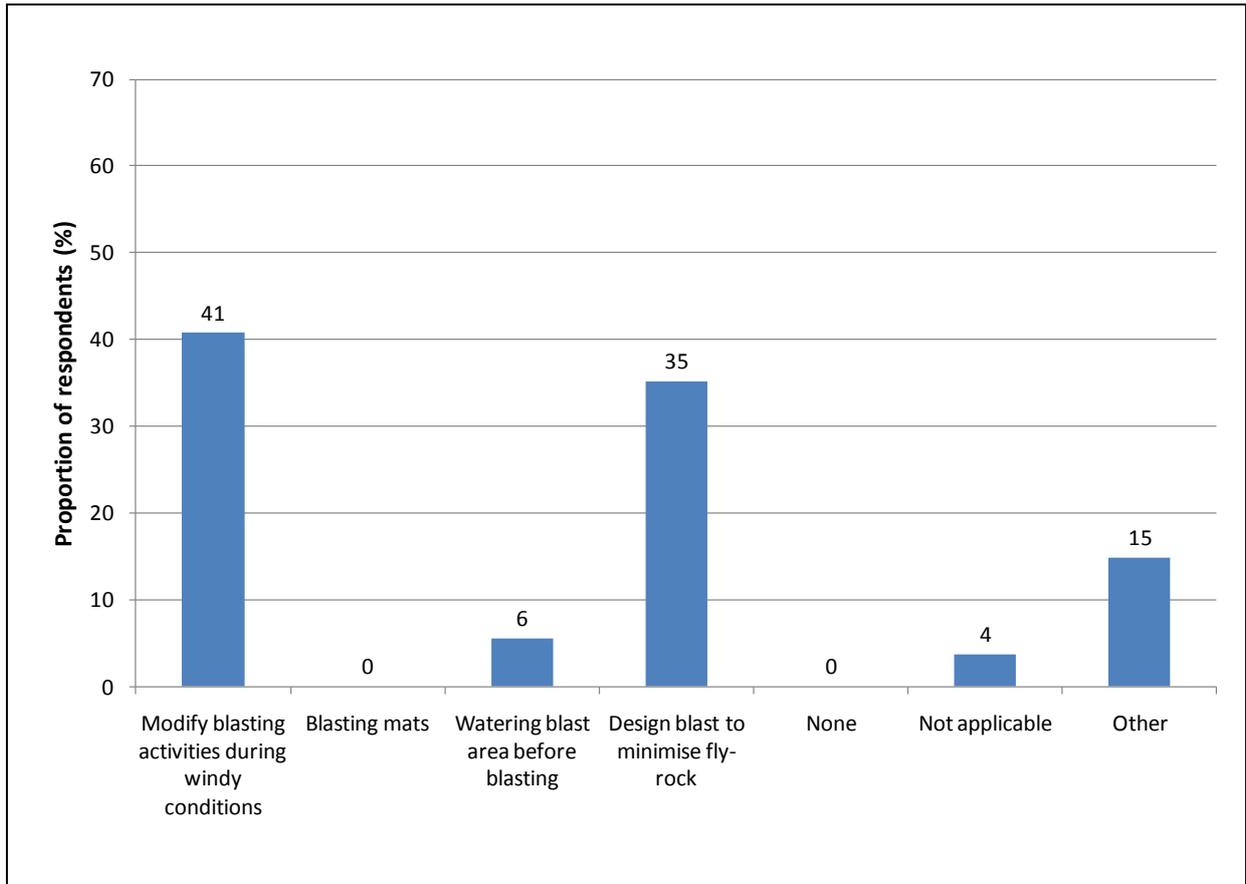


Figure E6 Survey Question 9, What techniques are currently used at your site to manage dust emissions from blasting?

Total respondents:

25

Number of responses:

54

Type:

Bar Chart

Other Comments:

- Blast with suitable wind direction.
- Blasting permissions pages to protect sensitive areas
- Blasts are designed, some watering for dust suppression on pattern during drilling.
- Delay blasting in adverse weather conditions, predictive met inversion modelling tools used
- Environmental Procedures; blasting permission pages with live met station feed; early or delayed blasting
- Increased stemming and reduced blast areas through design

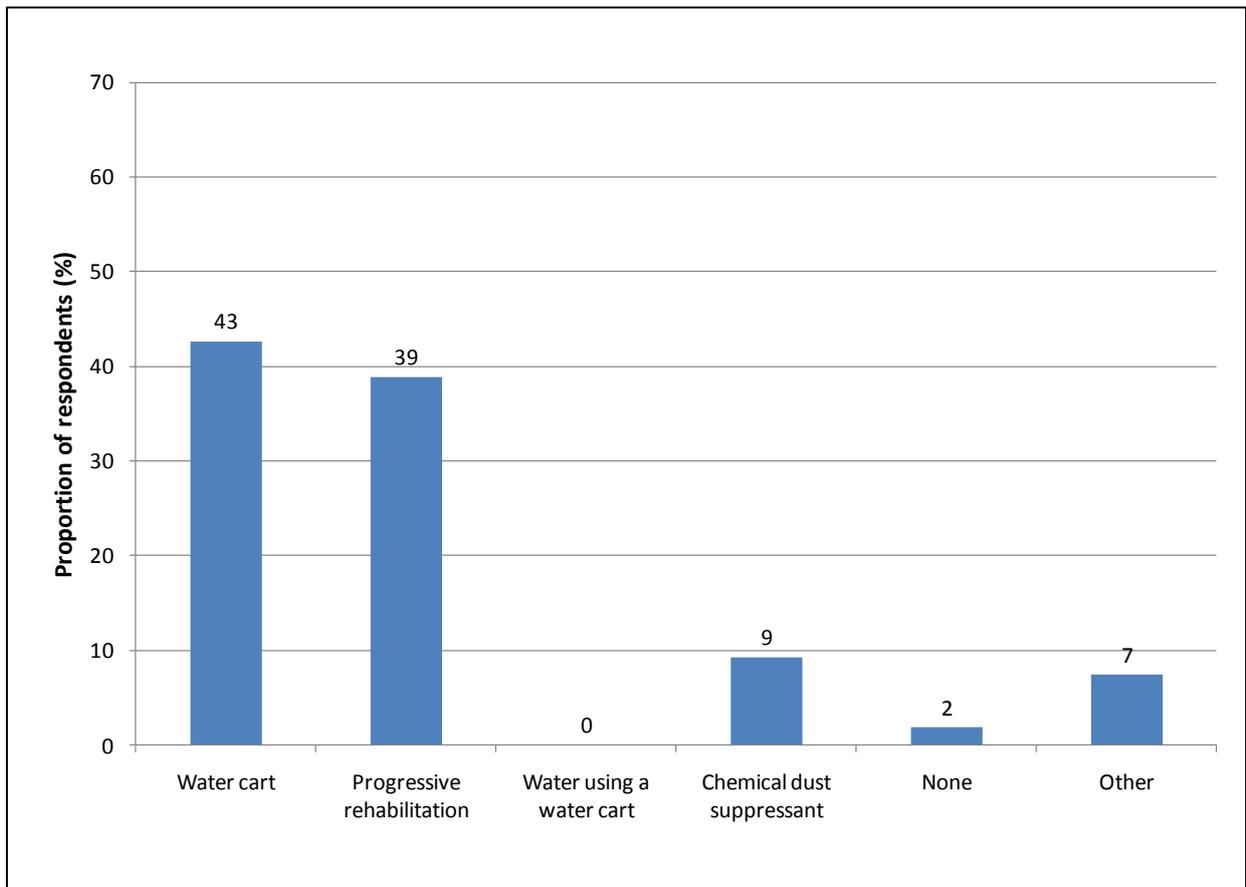


Figure E7 Survey Question 10, What techniques are used to manage wind erosion of dust from exposed material in-pit?

Total respondents:

25

Number of responses:

54

Type:

Bar Chart

Other Comments:

- Hydromulching and temporary rehabilitation.
- Modify operations in windy conditions, real time monitoring and sms alarming system, 85ha trial temporary revegetation into overburden for the purpose of dust mitigation
- Suppressant trials are planned for 2011; temporary rehabilitation to occur during Autumn 2011

E3 Overburden dumps

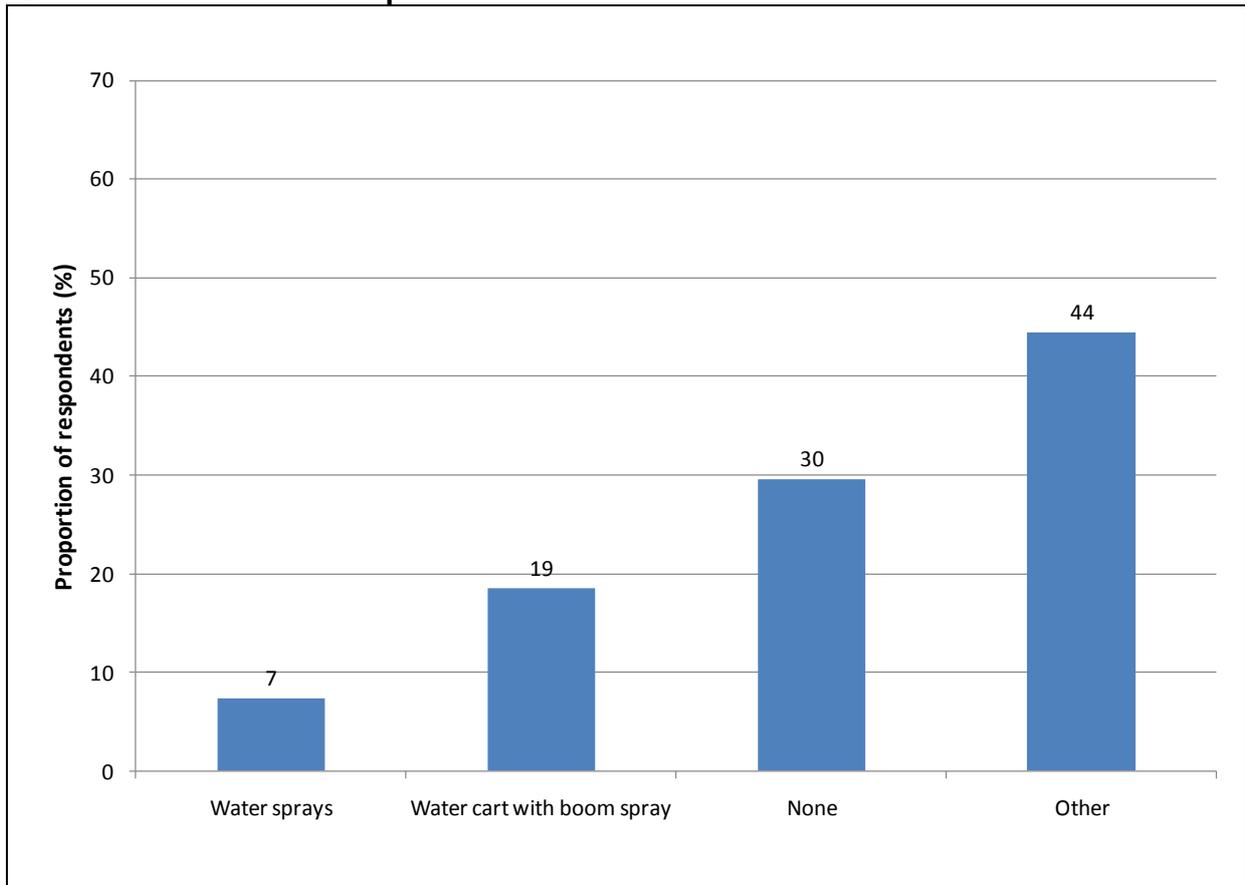


Figure E8 Survey Question 11, What techniques are currently used at your site to manage dust emissions from unloading trucks at the overburden dump?

Total respondents:

25

Number of responses:

27

Type:

Bar Chart

Other Comments:

- Environmental procedures; Equipment shutdown; Dust alarms around site; Dumping permissions pages to protect sensitive areas;
- Environmental Procedures; Water cart wetting of access surfaces; alternate/low dump options (when available), dump closure; dust alarms linked to real-time monitoring; wind speed alarms to site personnel; visual inspections; dumping permission pages under development.
- Minimise dump face heights, modify operations
- Modification of operations during windy conditions. Real time dust monitoring system with alarming systems in place to operations personnel,
- Modifying operations during certain weather conditions, water carts on dump faces and on material when being loaded.
- Modifying operations in windy conditions
- Not applicable, an overburden dump does not exist
- Relocation of tip areas (to in pit) in windy conditions (greater than 5.6M/sec).
- Water carts on dump to manage roads. Mine planning (alternative dump locations)
- Water carts, modify dumping process ie short dump minimise dumping over large faces etc

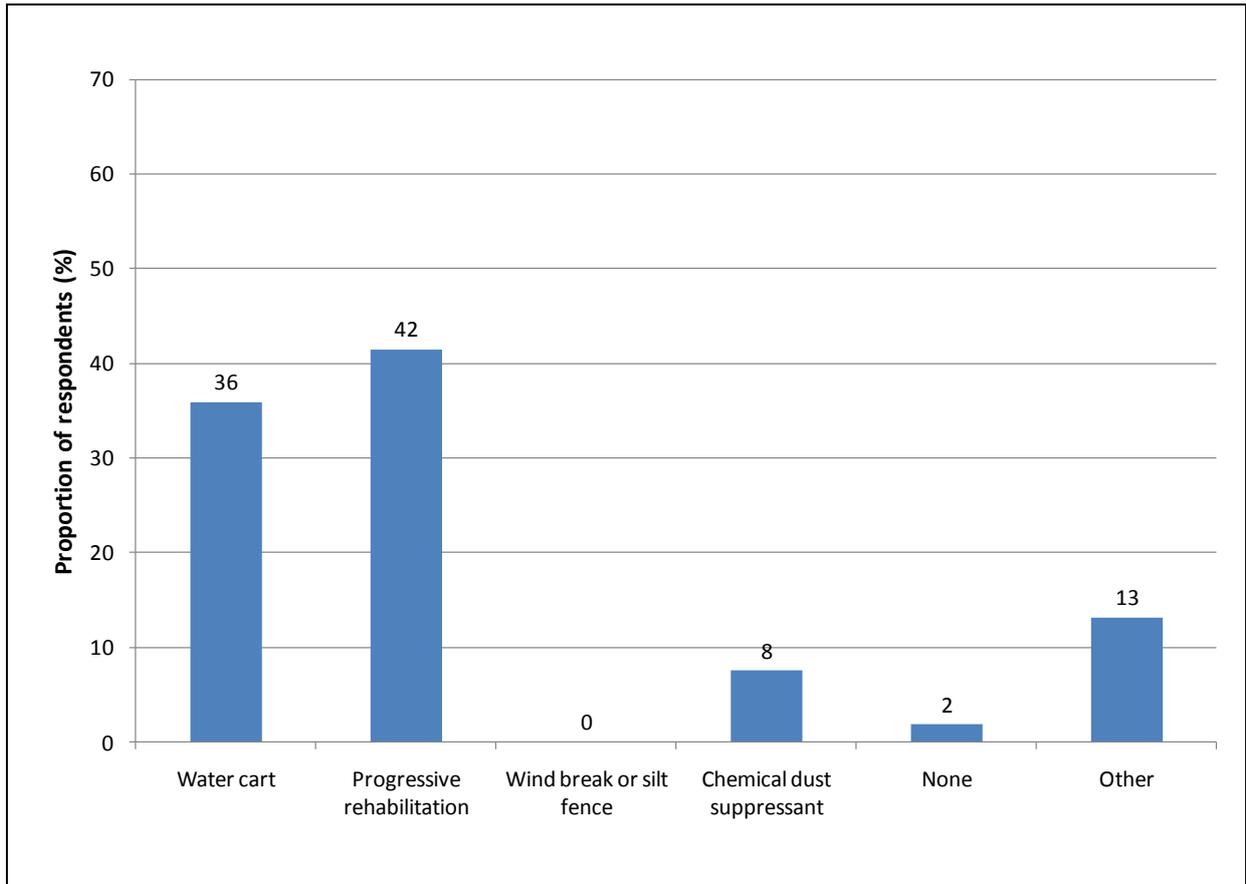


Figure E9 Survey Question 12, What techniques are used to manage wind erosion of dust from exposed material at overburden dumps?

Total respondents:

25

Number of responses:

53

Type:

Bar Chart

Other Comments:

- Environmental procedures; Equipment shutdown; Dust alarms around site; Dumping permissions pages to protect sensitive areas;
- Hydromulching and temporary rehabilitation
- Temporary rehab via aerial seeding to be undertaken in Autumn 2011
- Temporary vegetation of exposed dumps.
- Water is used on road surfaces/top of dumps - some loads may contain chemical suppressant

E4 Transport of coal and waste

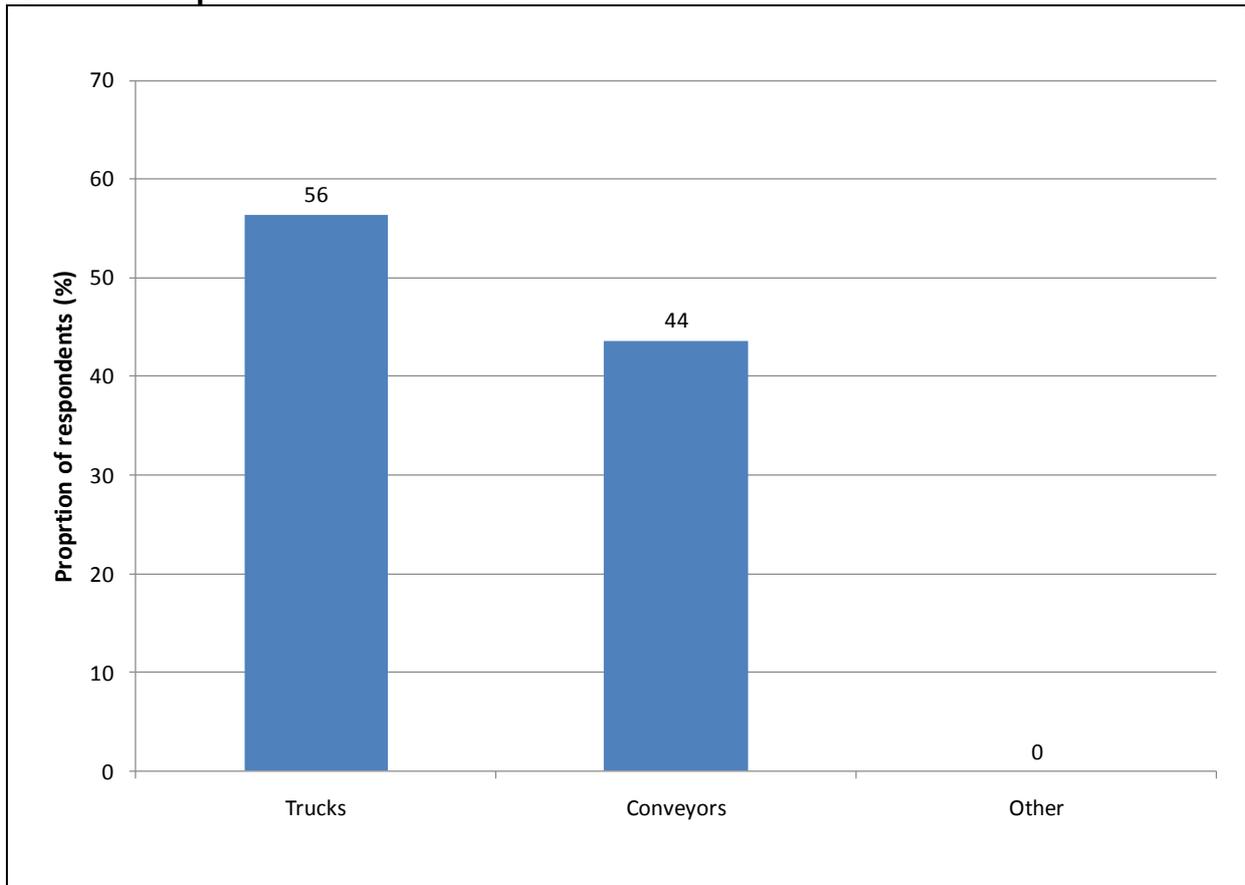


Figure E10 Survey Question 13, What method is used to transport coal from the pit or drift to the ROM pad?

Total respondents:
48

Number of responses:
55

Type:
Bar Chart

Other Comments:
n/a

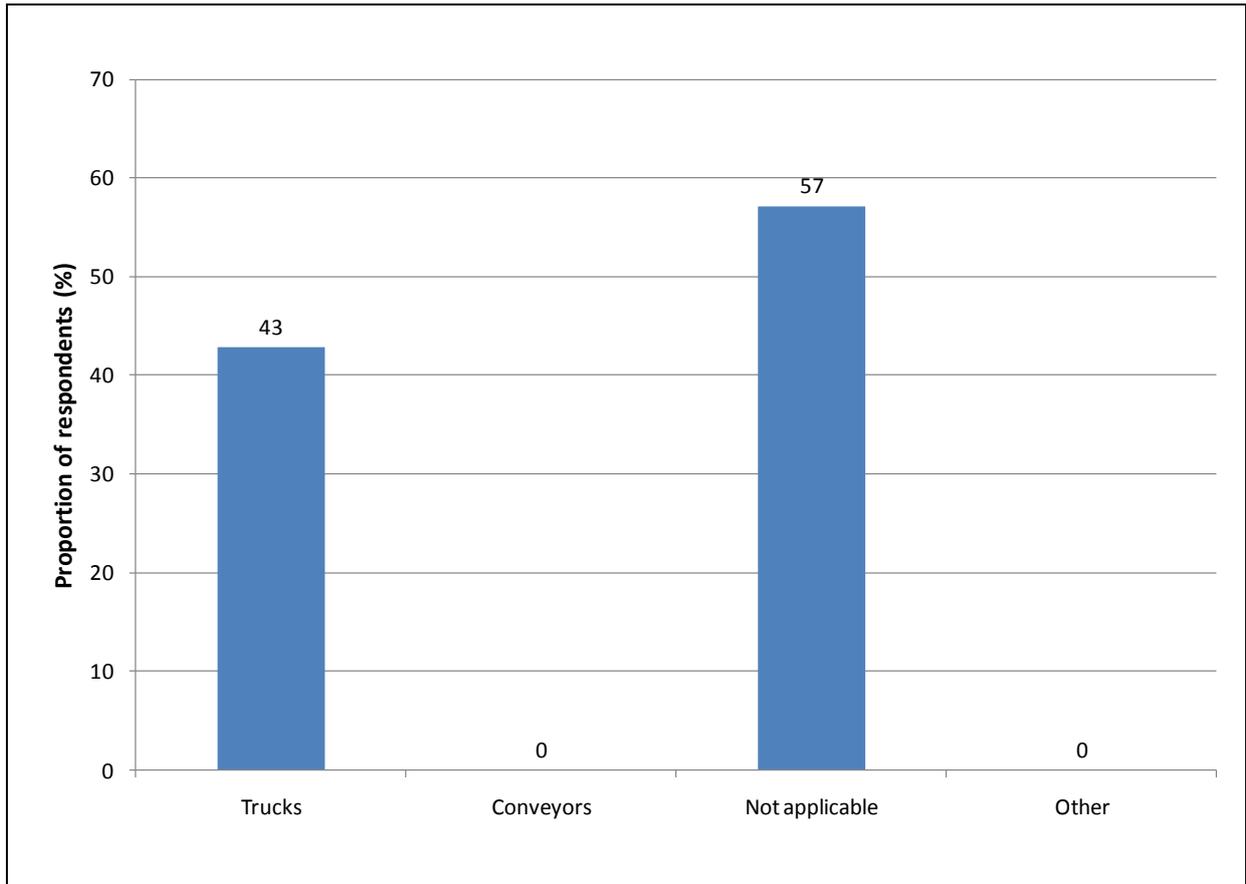


Figure E11 Survey Question 14, What method is used to transport overburden from the pit to out-of-pit waste dumps?

Total respondents:

49

Number of responses:

49

Type:

Bar Chart

Other Comments:

n/a

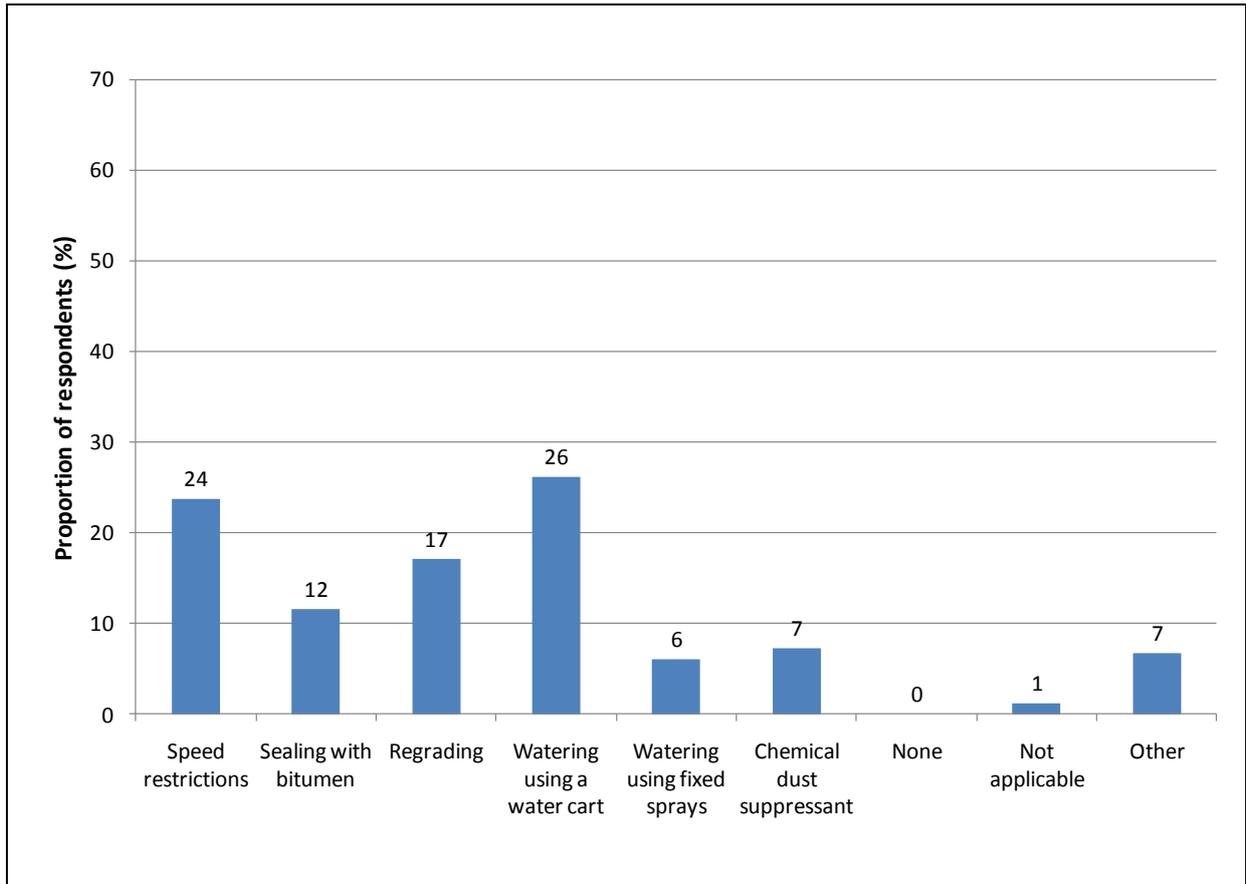


Figure E12 Survey Question 15, What techniques are currently used at your site to manage dust emissions from haul roads?

Total respondents: 49	Number of responses: 164	Type: Bar Chart
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Other Comments:

- Coal transported via conveyor, no haul roads on site.
- Education of all site personnel in relation to expectations of dust controls on haul roads, use of material on roads that is less likely to cause dust impacts.
- Environmental Procedures; Alarmed real-time monitors; operator training and empowerment to pull-up when conditions unacceptable; visual inspections; dedicated road crew; suppressant trails to occur during 2011
- gravelling of haul roads
- Modifying operations during certain weather conditions. Note also our water cart to road distance is very high we operate 2 water carts full time and 4 water carts under certain weather conditions.
- Operating procedures
- Part of the road network is bitumen sealed
- Site entry road is sealed. Site access roads (unsealed) used by mining equipment (i.e. Eimco's) is watered with a water truck.
- Tarps on trucks, Road sweeping
- Training on dust mitigation; conveyor to transport coal from CHPP to load point; Environmental procedures; Equipment shutdown;

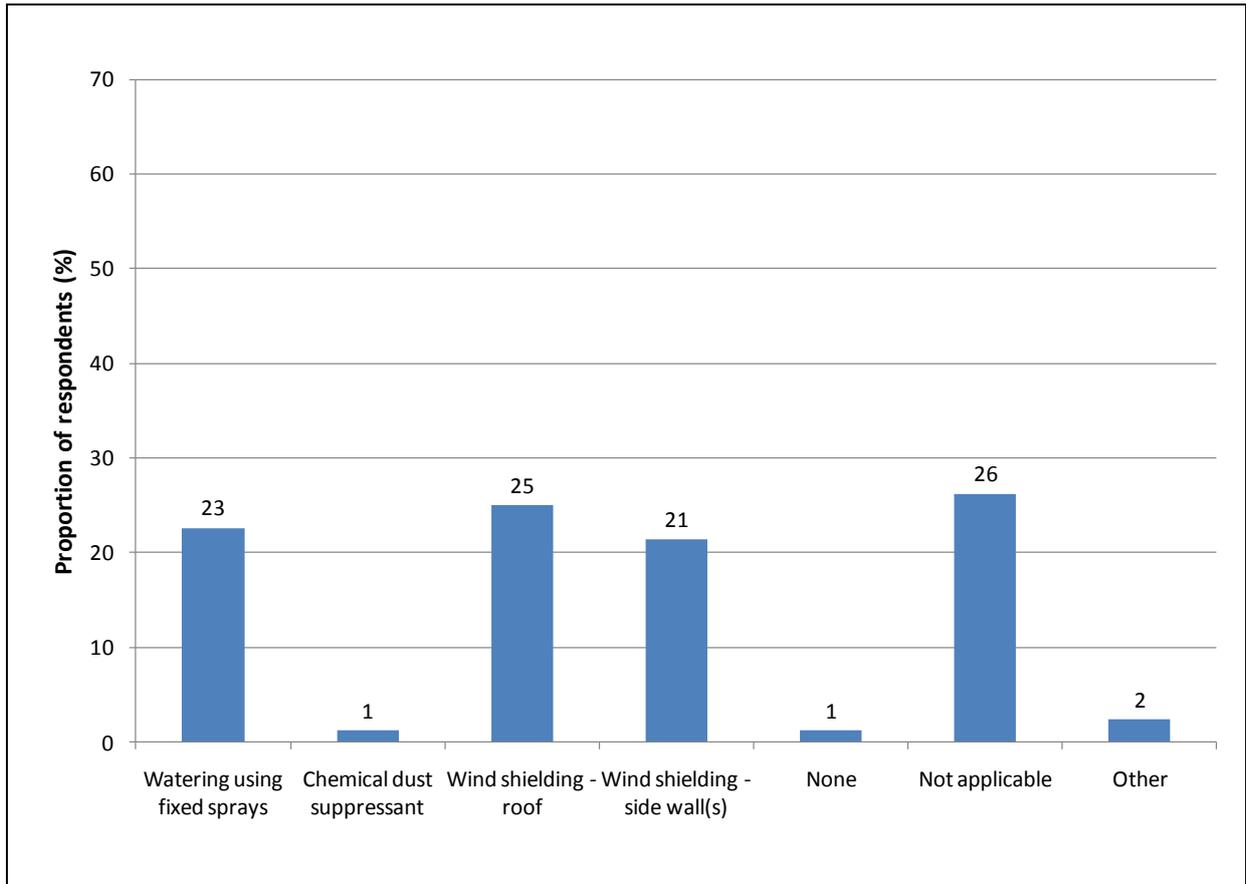


Figure E13 Survey Question 16, What techniques are currently used at your site to manage dust emissions from conveyors transporting coal or overburden to the ROM pad or waste dump?

Total respondents:

49

Number of responses:

84

Type:

Bar Chart

Other Comments:

- Not applicable to all installations
- Classified as a 'wet pit'. Total moisture of the ROM coal is high and thus does not require dust suppression.

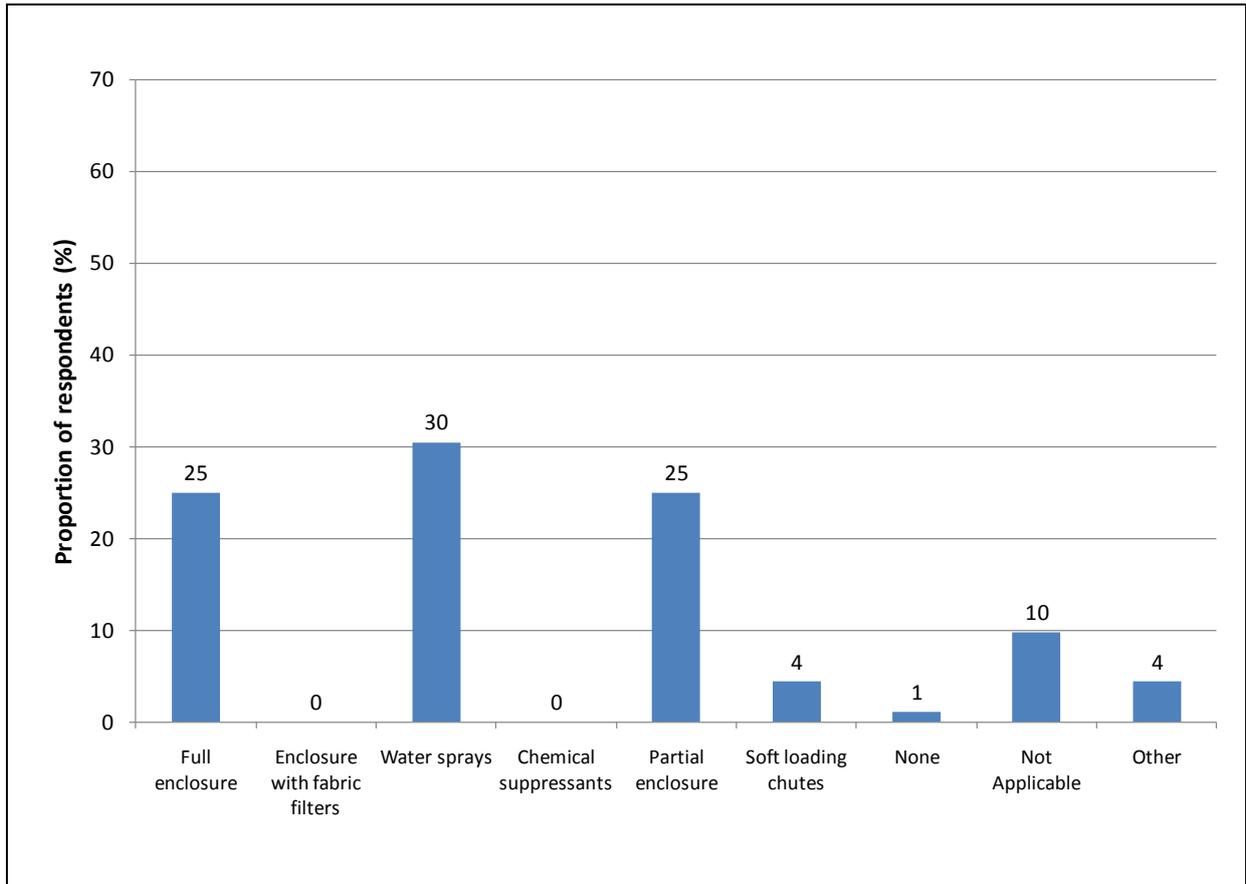


Figure E14 Survey Question 17, What techniques are currently used at your site to manage dust emissions from conveyor transfers?

Total respondents:

49

Number of responses:

92

Type:

Bar Chart

Other Comments:

- Chute designs incorporating pressure equalisation to prevent over pressure emissions from larger chutes with greater drop heights
- Not applicable to all installations
- See Survey Question 16 for details.
- Water sprays activated by tonnage on conveyor belts & conveyors contained in enclosed gantries

E5 ROM pad

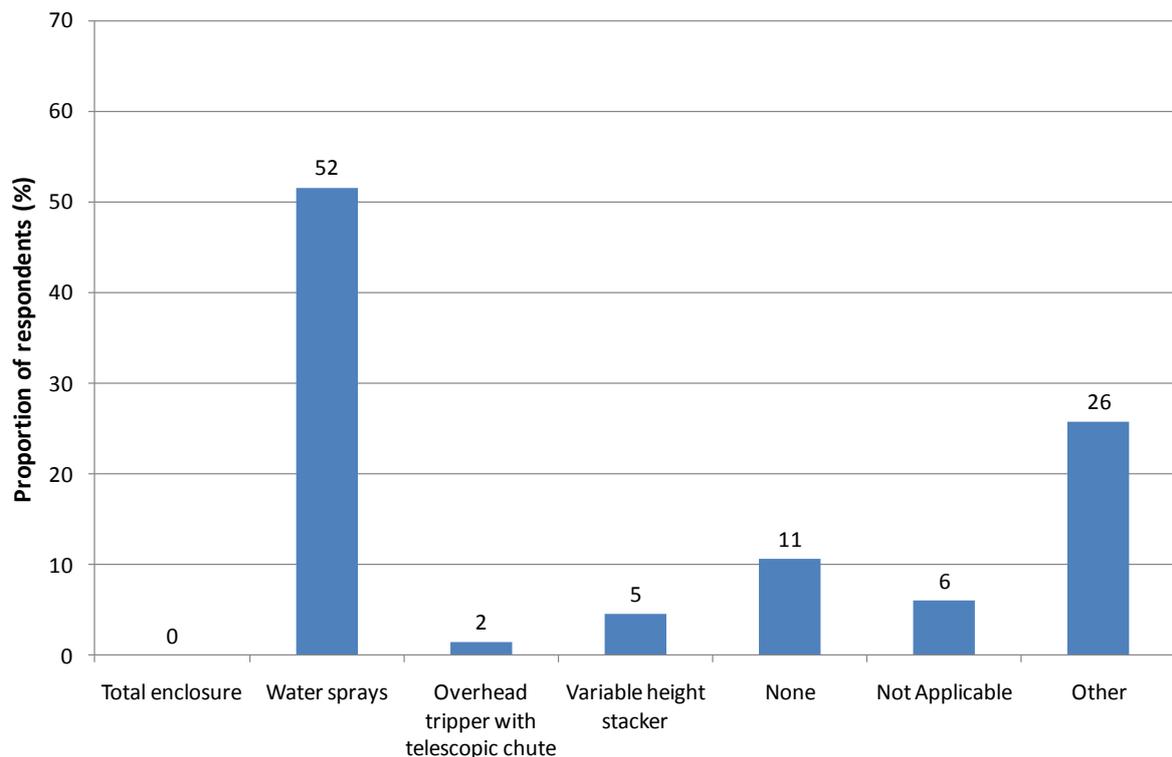


Figure E15 Survey Question 18, What techniques are currently used at your site to manage dust emissions from loading ROM stockpiles?

Total respondents:

52

Number of responses:

66

Type:

Bar Chart

Other Comments:

- In normal situations, loading straight from bin to trucks. Minimal stockpiling.
- Loading from stockpile using loader into trucks and watering using water cart. Note the majority of the coal is trucked straight from the mine from the Final Product Bin
- Majority of coal handled by direct dumping into ROM bin which has water sprays
- Rill tower
- ROM coal conveyed to ROM stockpile, which is pushed-in by a D10 dozer into a feeder and conveyed to an enclosed crushing plant for despatch to domestic customers or to the CHPP.
- Stacker belt fixed height
- Stockpiling only occurs during emergency conveyor breakdown. Stockpiled 2784t of coal 08/09.
- Water Cart x 6 responses
- Water Cart with monitor spray
- Water Cart, with cannon attachment, periodically used to dampen coal as required
- We have water sprays that totally surround the ROM area when operating there is a full water wall. We also have our underground ROM at a lower pit level.

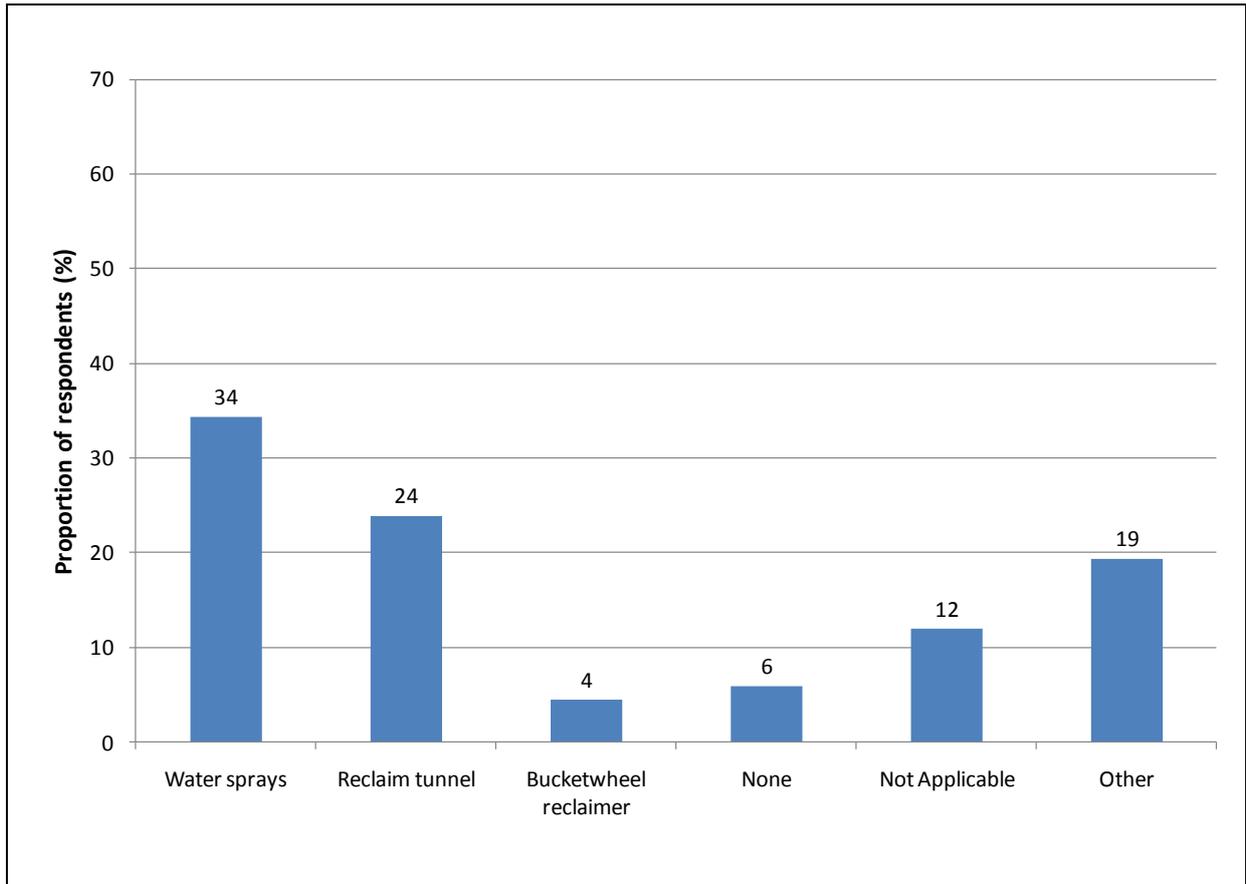


Figure E16 Survey Question 19, What techniques are currently used at your site to manage dust emissions from unloading ROM stockpiles?

Total respondents:

52

Number of responses:

67

Type:

Bar Chart

Other Comments:

- Water carts 11%
- Bridge chain reclaimer
- In normal situations, loading straight from bin to trucks. Minimal stockpiling.
- Loader fills trucks and then watering from water cart
- Water cart, with cannon attachment, periodically used to dampen coal as required.
- We have water sprays that totally surround the ROM area when operating there is a full water wall. We also have our underground ROM at a lower pit level.

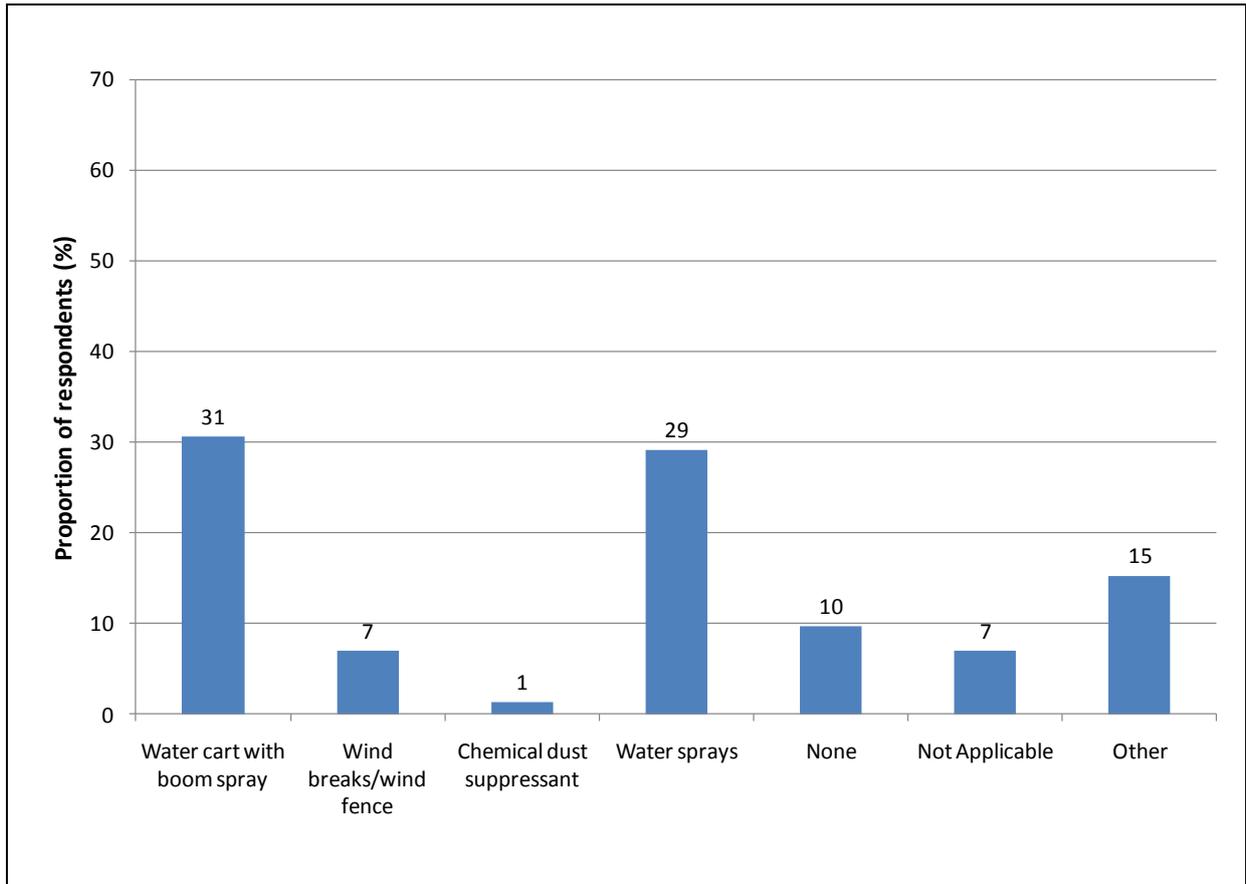


Figure E17 Survey Question 20, What techniques are currently used at your site to manage dust emissions from wind erosion of ROM stockpiles?

Total respondents:

51

Number of responses:

72

Type:

Bar Chart

Other Comments:

- Inherent product moisture; low retention time at stockpiles;
- Limited ROM stockpile area and fixed boom spray
- Not purpose built wind breaks, but shielding by location of surrounding building/structures etc.
- Partial protection on Western side by embankment Appin East.
- See Question 16 for details. Additionally, ROM coal is conveyed on a regular basis to the enclosed crusher plant when stockpile (e.g. low exposure to wind).
- Stockpiling only occurs during emergency conveyor breakdown. Stockpiled 2784t of coal 08/09.
- Water carts on stockpile area
- We have water sprays that totally surround the ROM area when operating there is a full water wall. We also have our underground ROM at a lower pit level.
- Wetting sprays to be re-implemented following ROM refurbishment

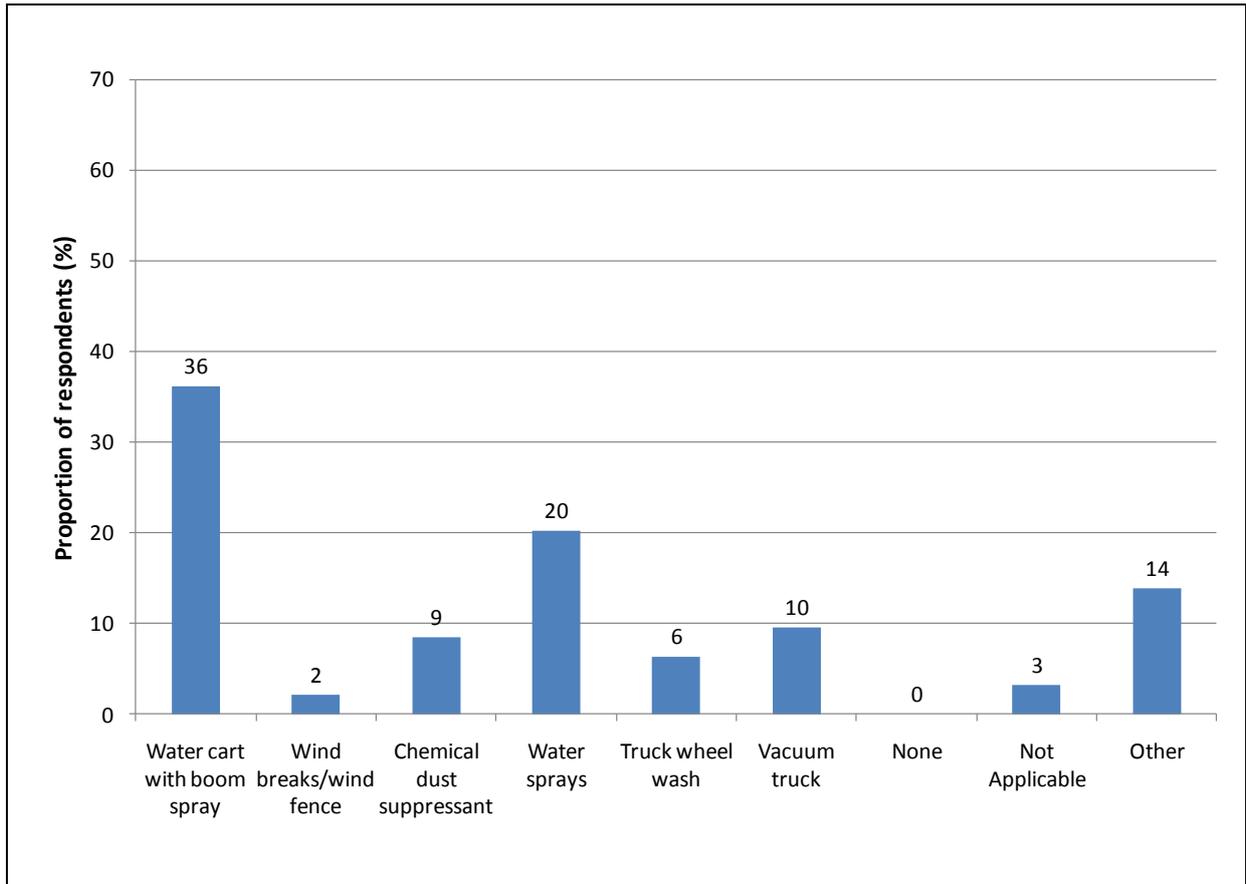


Figure E18 Survey Question 21, What techniques are currently used at the ROM pad to manage dust emissions from wind erosion of general site areas and access roads?

Total respondents:

52

Number of responses:

94

Type:

Bar Chart

Other Comments:

- 5% Water cart
- 2% See Survey Question 20 for details.
- Main access roads are sealed
- Road sweeper as occasionally required
- Sealed roads to/around stockpile
- Stockpiling only occurs during emergency conveyor breakdown. Stockpiled 2784t of coal 08/09.
- Water carts and dust sweepers on access road
- We have water sprays that totally surround the ROM area when operating there is a full water wall. We also have our underground ROM at a lower pit level.

E6 Coal handling and processing plant

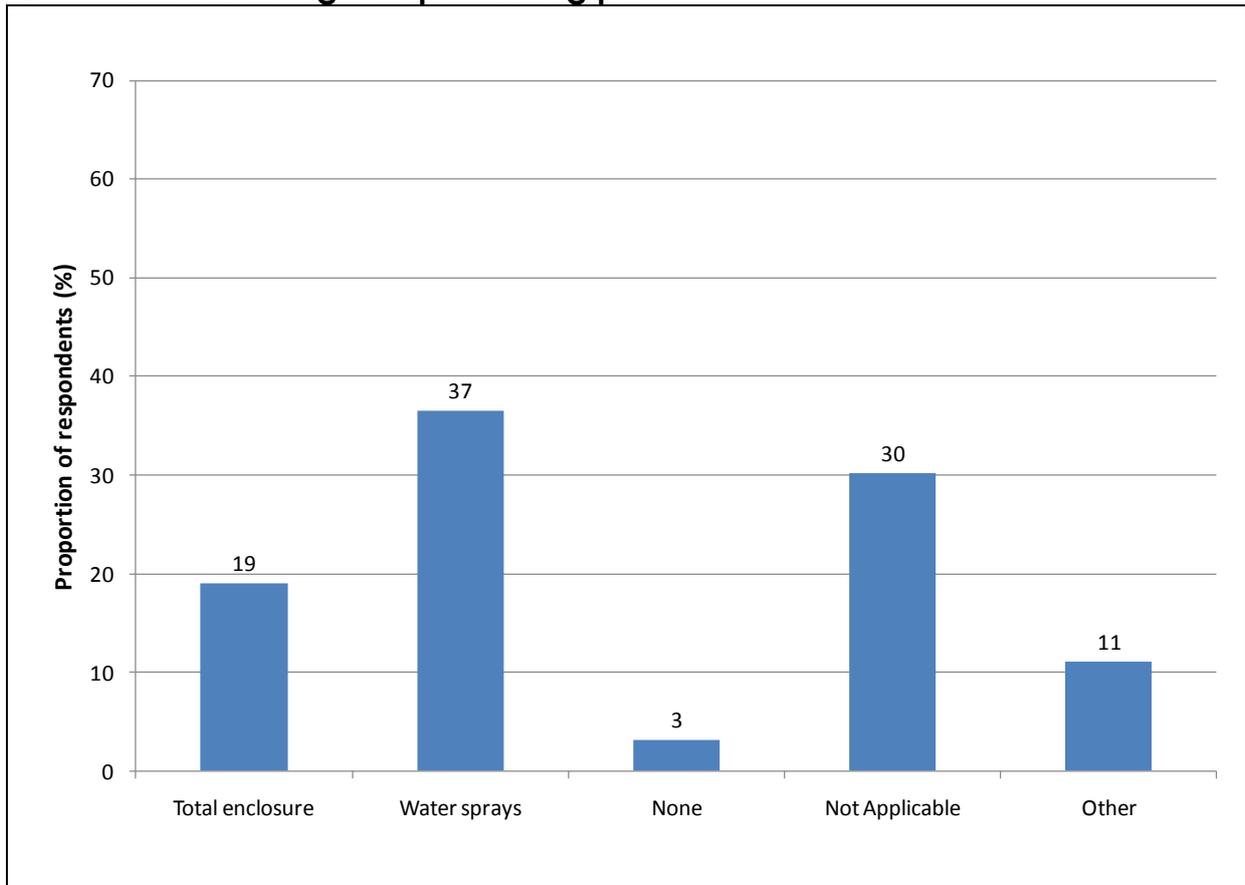


Figure E19 Survey Question 22, What techniques are currently used at your site to manage dust emissions from loading coal into the CHPP hopper?

Total respondents:
52

Number of responses:
63

Type:
Bar Chart

Other Comments:

- A coal crushing (<50mm) plant is located on the site with coal being pushed-in by a D10 dozer into a feeder and conveyed into the crusher.
- Generally the moisture content of ROM feed is very high
- High fencing around hopper
- Inherent water content and water cart if required
- Reclaim tunnel
- Stockpiling only occurs during emergency conveyor breakdown. Stockpiled 2784t of coal 08/09.
- The coal is not treated only screened and crushed. There is no reject

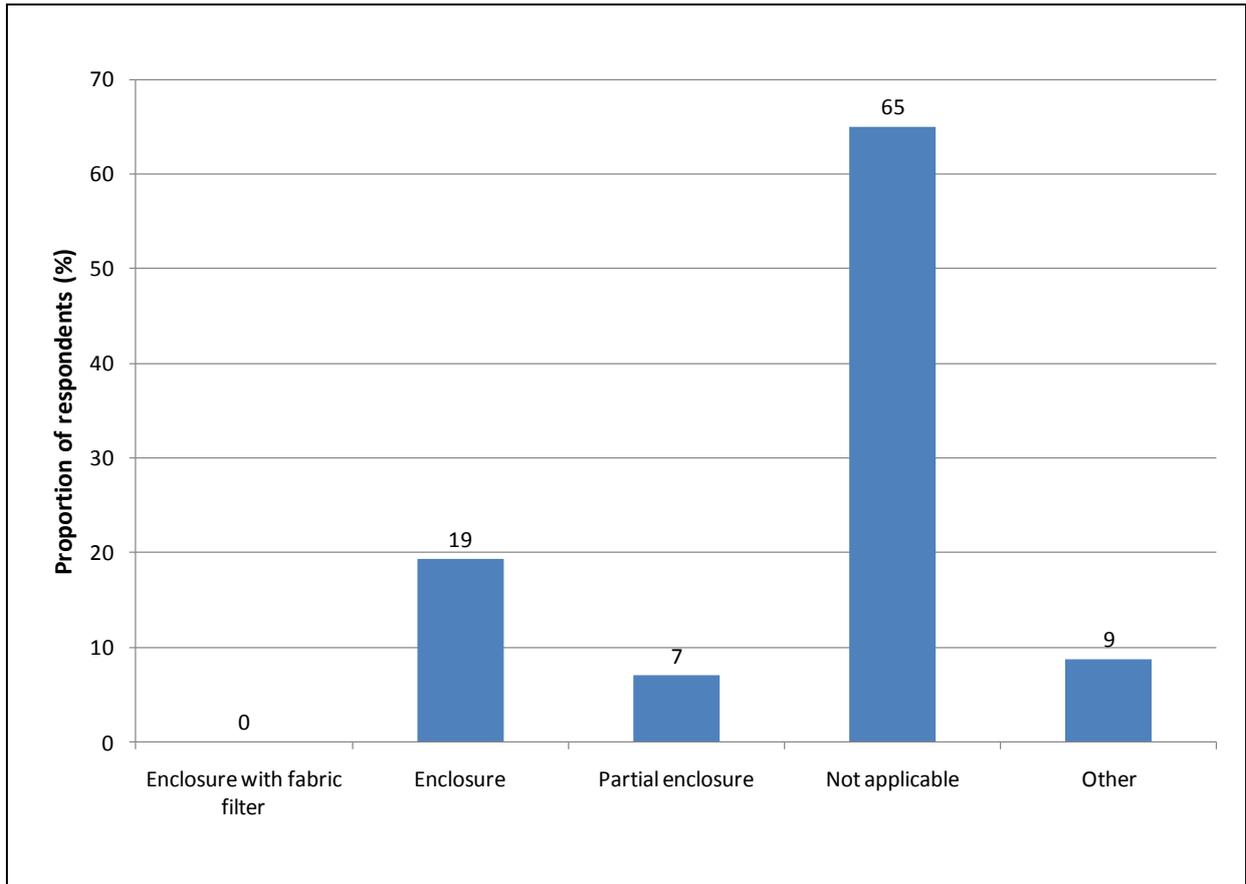


Figure E20 Survey Question 23, What methods are used to control dust emissions from dry processing of coal?

Total respondents:

52

Number of responses:

57

Type:

Bar Chart

Other Comments:

- Coal is sprayed with water prior to/during screening
- No dry processing
- ROM coal has high total moisture, due to the pit being wet.
- Water sprays
- Water sprays activated by tonnage on conveyor belts & conveyors contained in enclosed gantries

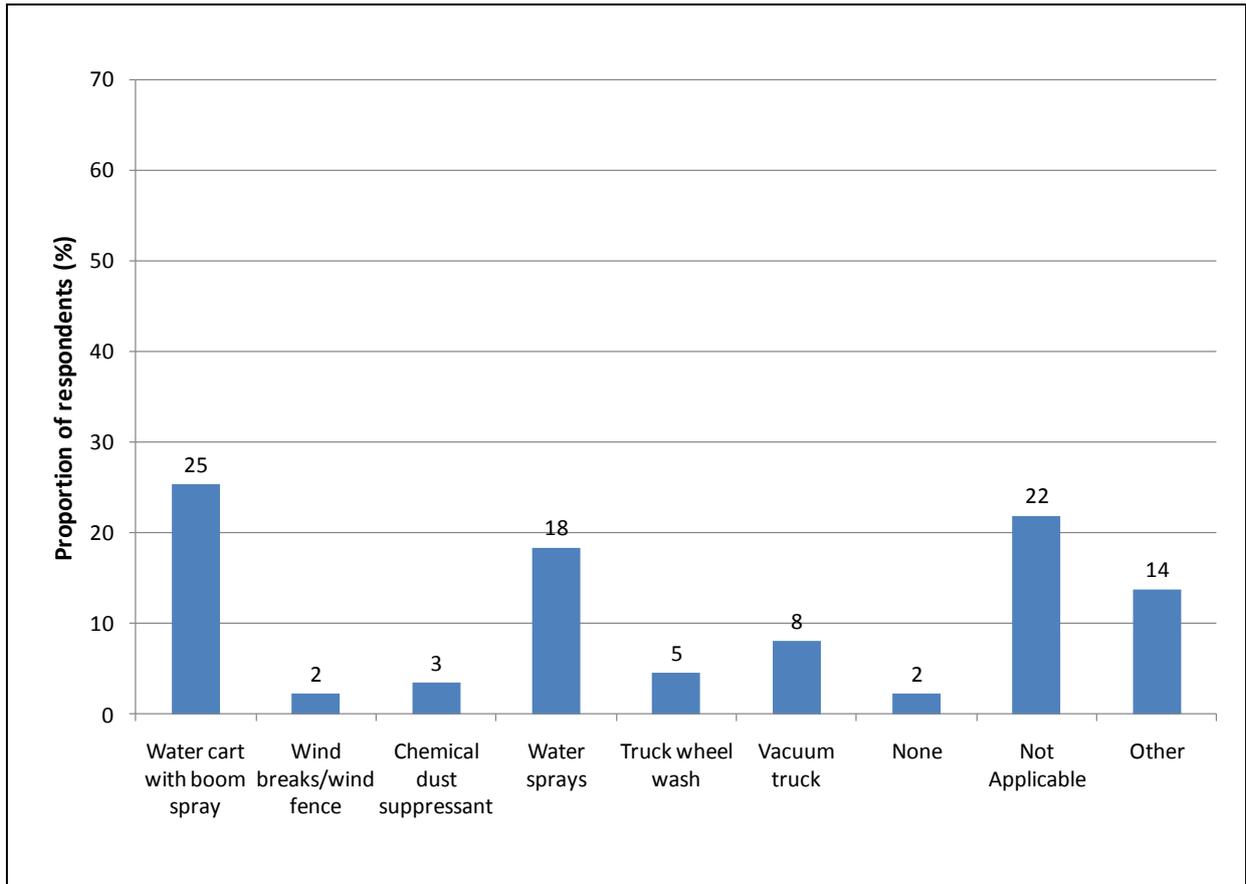


Figure E21 Survey Question 24, What techniques are currently used at the CHPP to manage dust emissions from wind erosion of general site areas and access roads?

Total respondents:

52

Number of responses:

87

Type:

Bar Chart

Other Comments:

- Bitumen sealed road areas and pit top
- Main access roads are sealed
- Sealed roads (bitumen) around the CHPP area
- Sealed roads around CHPP; Water cart throughout CHPP areas;
- sealed roads at plants; bobcat with sweeper; routine sweeping
- Sealed roads, revegetation and rehabilitation around the site.
- some access roads are sealed with asphalt or concrete
- Tarmac Roads
- Water cart, sealed roads
- Water carts

E7 Tailings dams

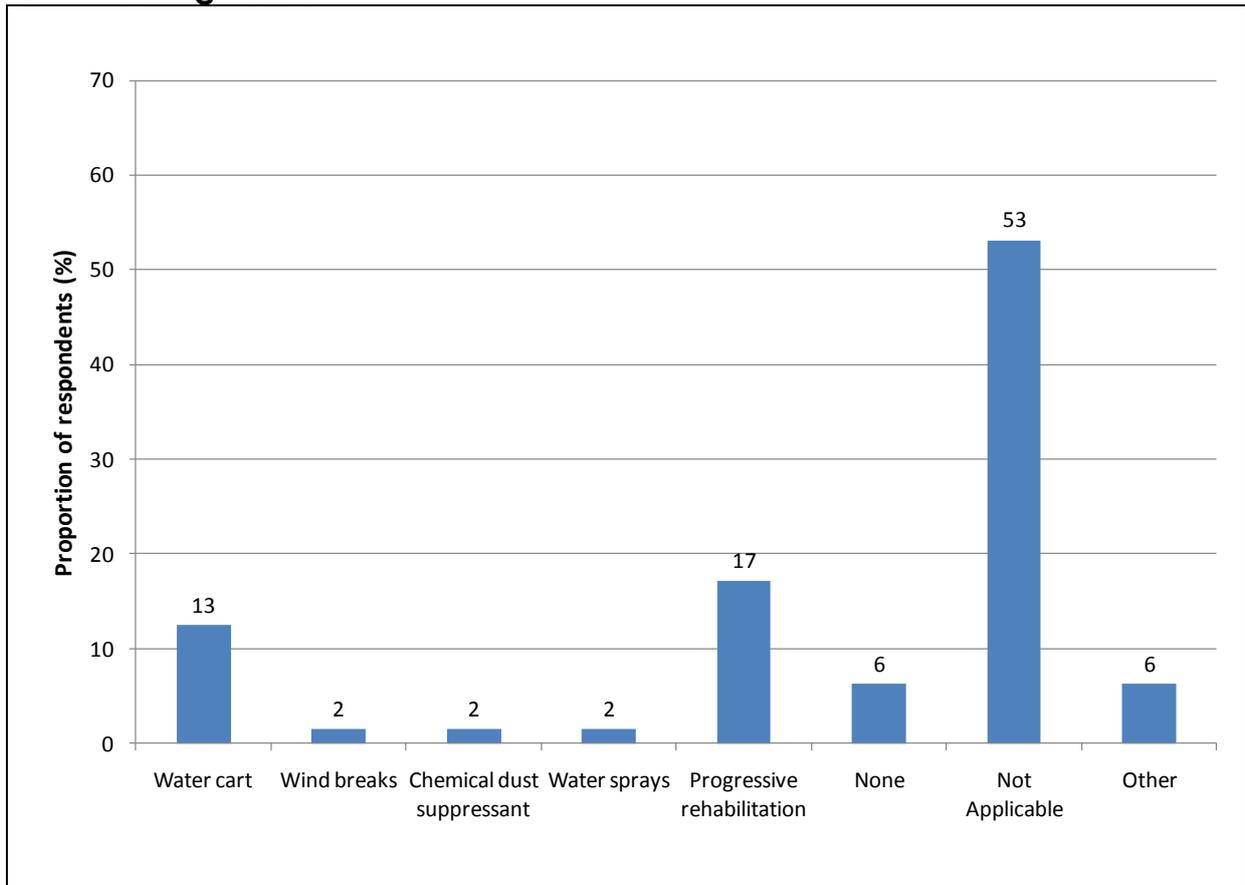


Figure E22 Survey Question 25, What techniques are currently used at your site to manage dust emissions from wind erosion of tailings dams?

Total respondents:
52

Number of responses:
64

Type:
Bar Chart

Other Comments:

- Contained within previous mining voids (approx 20m freeboard to GL)
- Maintain as wet; emplacements below ground level;
- Predominantly wet material
- We have no dry exposed tailings dams

E8 Product coal load-out

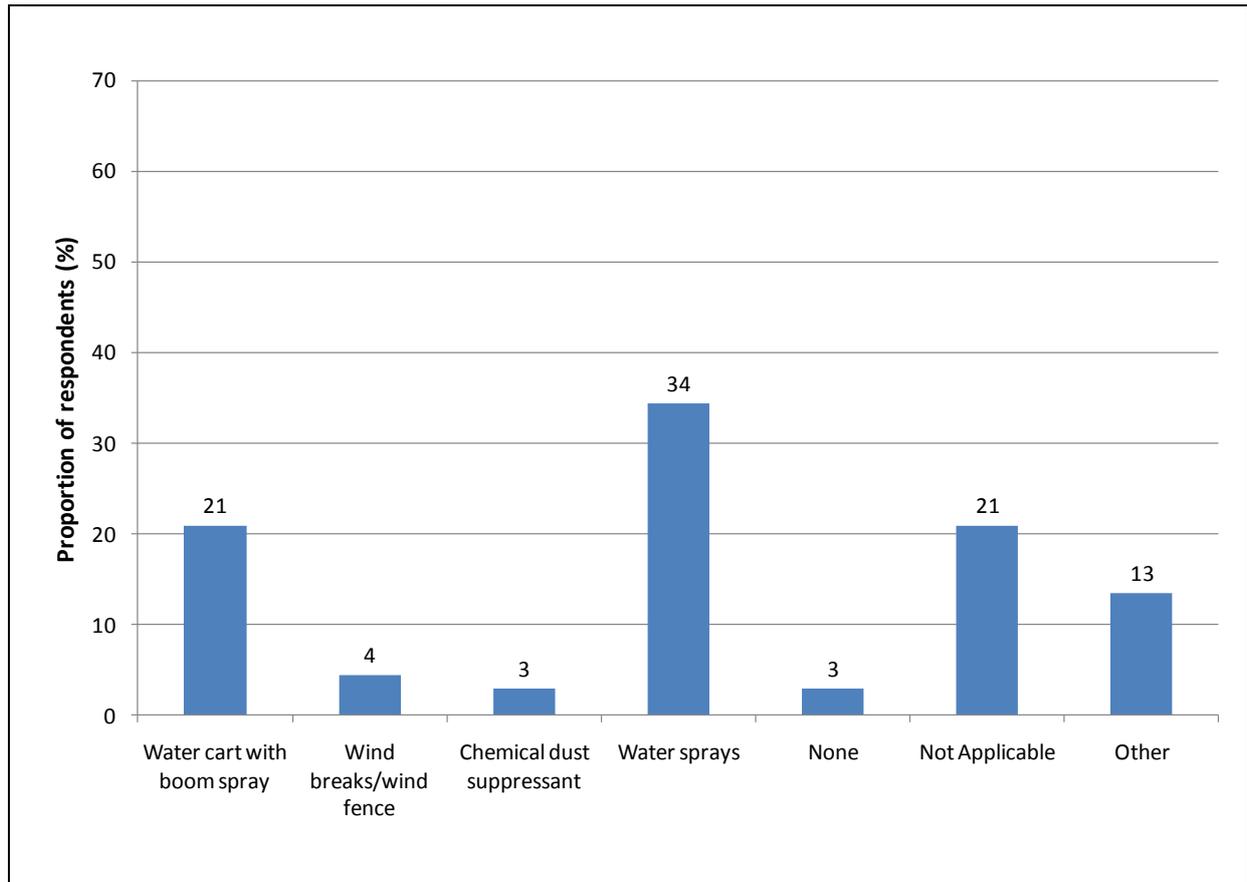


Figure E23 Survey Question 26, What techniques are currently used at your site to manage dust emissions from wind erosion of product coal stockpiles?

Total respondents:

50

Number of responses:

67

Type:

Bar Chart

Other Comments:

- Coal is wet when stockpiled
- In normal situations, loading straight from bin to trucks. Minimal stockpiling.
- Inherent product moisture; Variable height stacker;
- Process water from Crushing Plant / CHPP
- ROM coal is generally high in moisture (e.g. 6.5% TM)
- Stockpiling only occurs during emergency conveyor breakdown. Stockpiled 2784t of coal 08/09.
- Water Truck
- Wind speed activated water sprays; inherent product moisture and short residence time

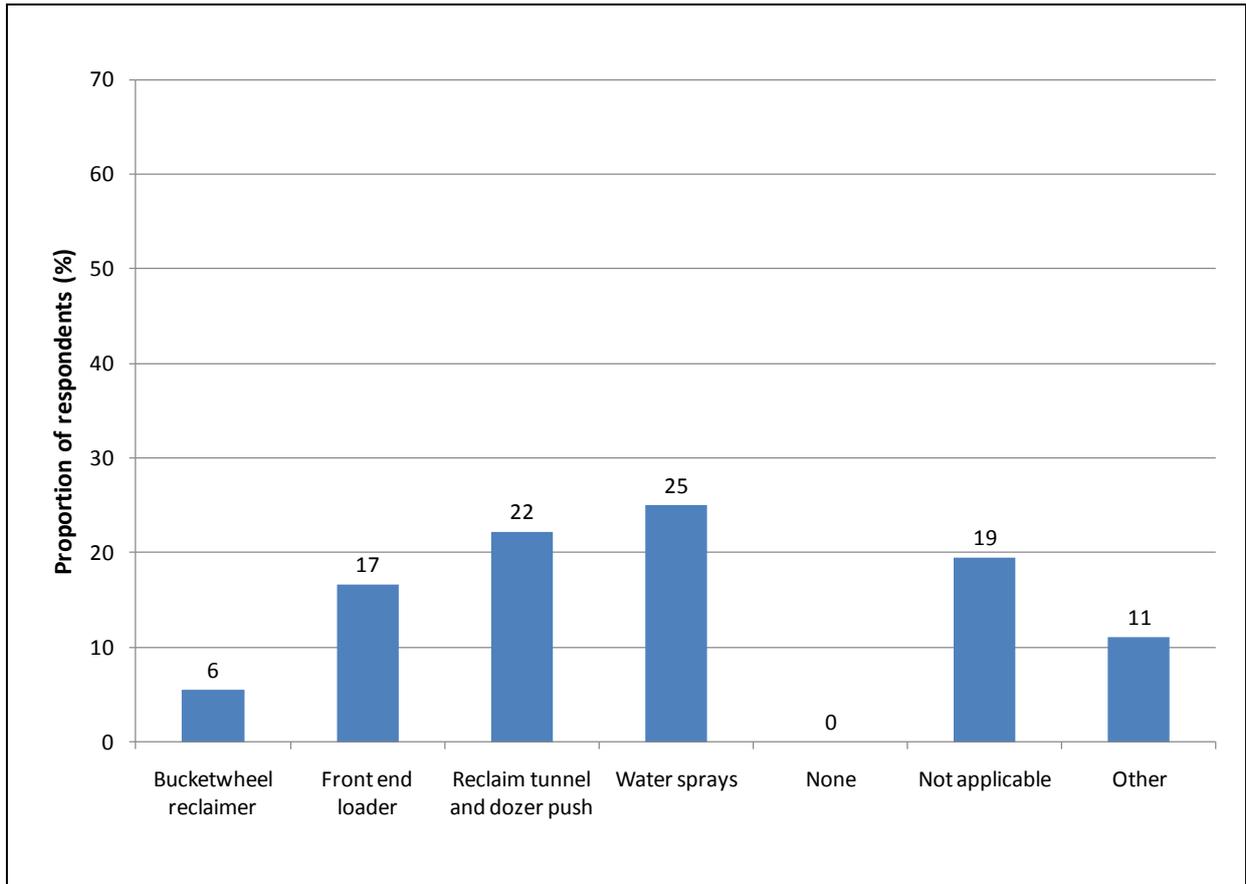


Figure E24 Survey Question 27, What techniques are currently used at your site to manage dust emissions whilst transferring product coal from stockpiles?

Total respondents:

50

Number of responses:

72

Type:

Bar Chart

Other Comments:

- 6 % Water cart
- A-frame bucket reclaimers for HVCHPP, Howick & HVLP;
- Coal is transferred via enclosed trucks
- In normal situations, loading straight from bin to trucks. Minimal stockpiling.
- Partially enclosed conveyors
- Stockpiling only occurs during emergency conveyor breakdown. Stockpiled 2784t of coal 08/09.
- Water cart used to dampen coal prior to loading. Water cart also dampens the travel route of the haul roads to minimise dust emissions.

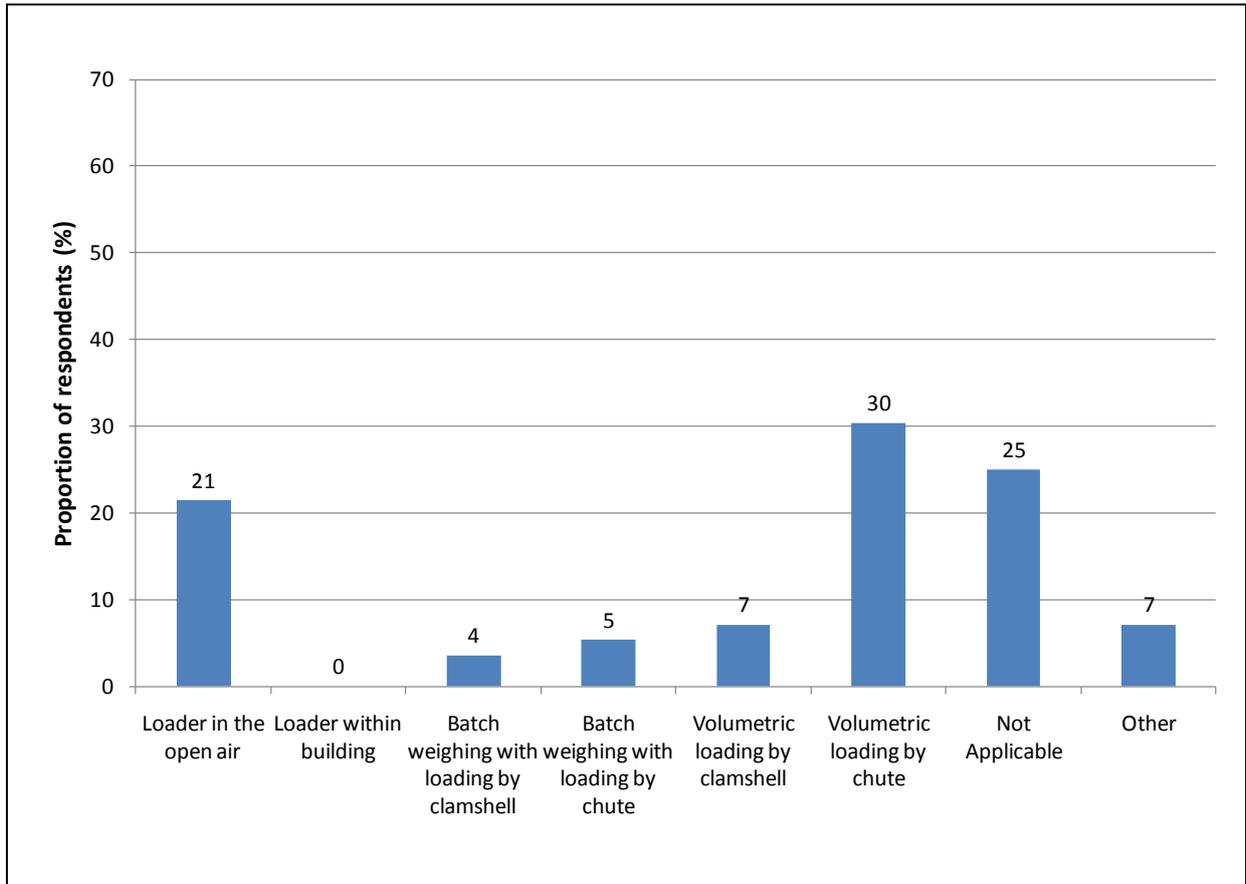


Figure E25 Survey Question 28, What methods are used for loading product coal to trains or trucks for off-site transport?

Total respondents:

49

Number of responses:

56

Type:

Bar Chart

Other Comments:

- 45 tonne Excavator
- Manually operated, enclosed train loading bin with chute
- Note loading of ROM coal into train occurs.
- Product coal transferred by conveyor.

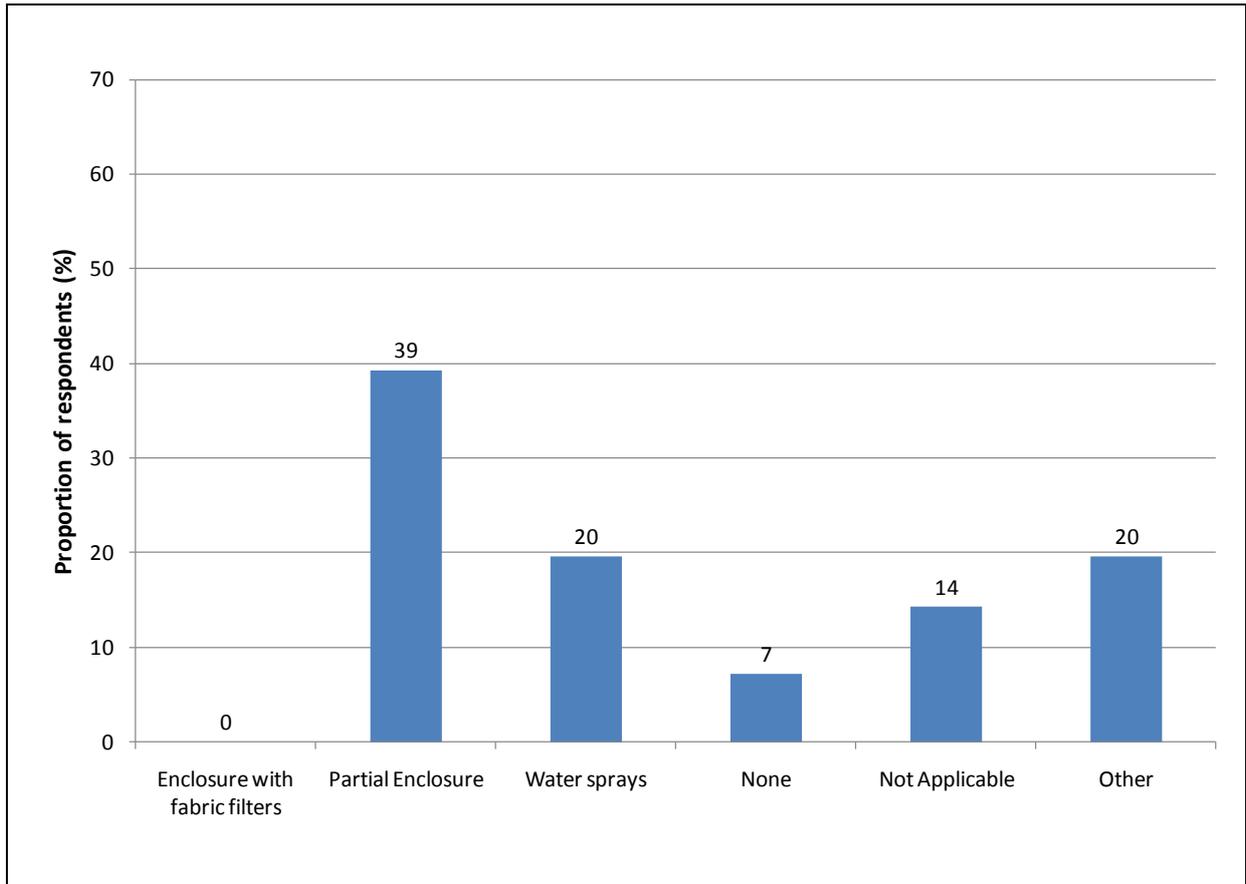


Figure E26 Survey Question 29, What techniques are currently used at your site to manage dust emissions from loading trains and/or trucks?

Total respondents:

48

Number of responses:

56

Type:

Bar Chart

Other Comments:

- 4 % Water Truck
- Av moisture at 8.5%
- fully enclosed train loadout facility
- Inherent moisture of product after washing
- Manually operated, enclosed train loading bin with chute
- Raw coal loading from the coal bin has retained moisture, Stockpile of raw coal is kept moist via sprays
- See Survey Question 28.
- Water cart us used to dampen coal prior to loading. Water cart is on site all the time.
- Water cart with monitor spray

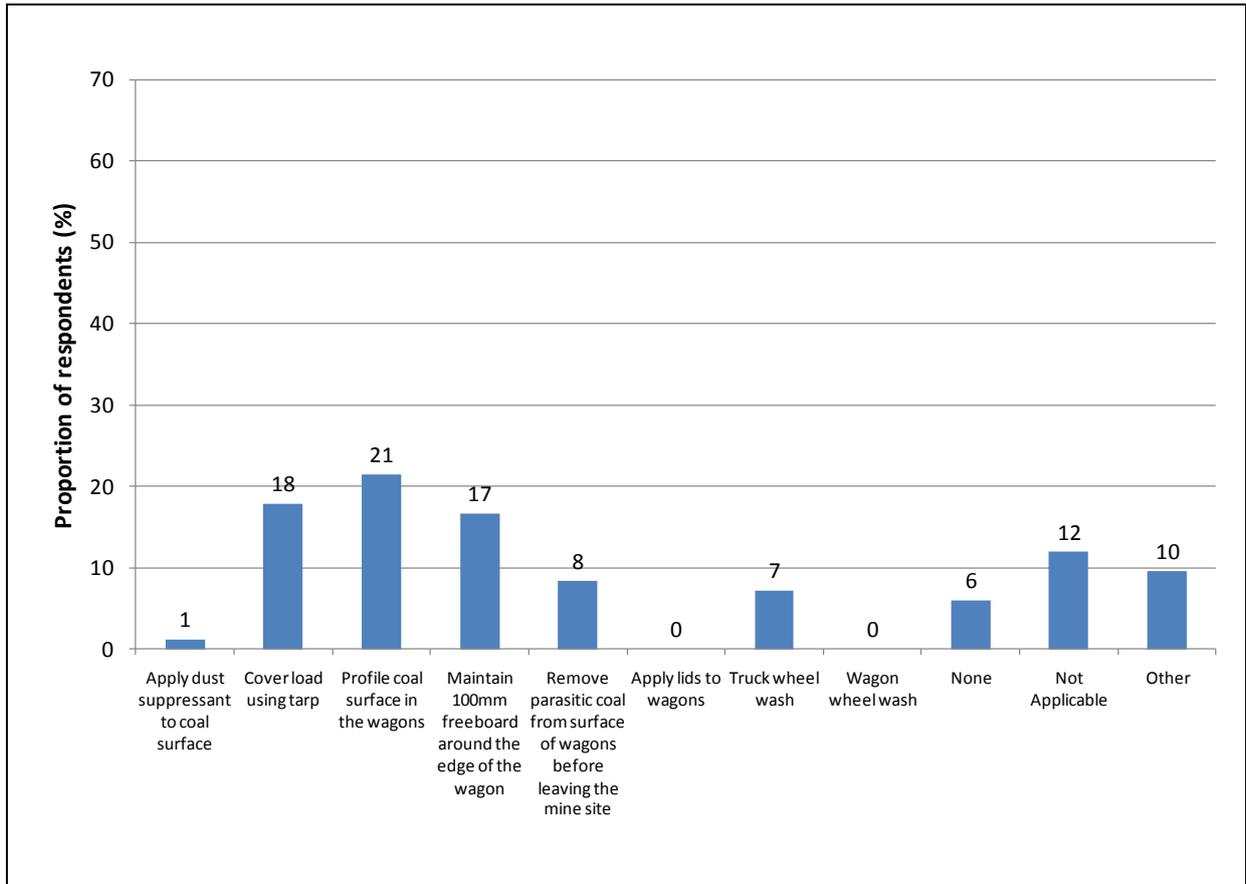


Figure E27 Survey Question 30, What techniques are currently used to manage dust during transport of coal?

Total respondents:

49

Number of responses:

84

Type:

Bar Chart

Other Comments:

- Coal is wet when it is loaded
- Cover load using tarp for trucking
- Enclosed conveyor
- See Survey Question 28. Also, conveyor is enclosed.
- Train wash down sprays with passage through load point
- Truck shaker grid
- Water sprays