



**NEW HOPE**  
GROUP

## J.10 Air Quality Management Plan





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# AIR QUALITY MANAGEMENT PLAN

*New Acland Coal Mine  
Stage 3 Project*

**JANUARY 2014**



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# 1. Introduction

This report documents the Air Quality Management Plan (AQMP) for New Acland Coal Pty Ltd (NAC) proposed New Acland Stage 3 Coal Mine Project – Revised Project (the revised Project).

NAC currently operates the existing New Acland Coal Mine (the Mine) which is an open cut coal mine on mining lease (ML) 50170 and ML 50216, under the approval of EA No. EPML00335713. The Mine has approval from the Department of Environment and Heritage Protection (DEHP) to produce up to 4.8 Million tonnes per annum (Mtpa) of product coal.

NAC is currently seeking environmental approvals for the revised Project which involves the staged expansion of the Mine up to a maximum capacity of 7.5 Mtpa of product coal through the inclusion and progressive development of three new resource areas within mining lease application (MLA) 50232 – Manning Vale West, Manning Vale East and Willeroo.

## 1.1. Objectives

The objectives of the AQMP are to:

- comply with all regulatory requirements;
- identify the major dust emission sources from the mining operations;
- minimise dust emissions to the maximum possible extent;
- investigate concerns relating to dust in a timely manner and devise measures that deal effectively with the causes of legitimate concerns;
- reduce the potential for concerns relating to dust emissions;
- document proactive dust mitigation measures for each dust source;
- identify proposed dust monitoring locations, equipment and frequency for the Mine's dust monitoring program;
- document actions and responsibilities in the event of an exceedance of a dust trigger level or a legitimate concern;
- document reporting and management requirements for dust monitoring data.

## 1.2. Environmental Requirements and Obligations

Queensland legislation relevant to addressing the air quality aspects of the revised Project includes:

- the *Environmental Protection Act 1994* (EP Act), and its subordinate legislation;
- the Environmental Protection (Air) Policy 2008 (EPP (Air)).

In terms of site specific environmental approvals, the operation of the Project must comply with the conditions of its future Environmental Authority (EA).

### 1.3. Air Quality Performance Criteria

The relevant air quality performance criteria for the revised Project are presented in Table 1-1. These air quality performance criteria were defined from the EPP (Air) and the DEHP (2013) Guideline: Model mining conditions (DEHP, 2013) and the Good practice guide for assessing and managing the environmental effects of dust emissions (NZME, 2001).

Table 1-1 Air Quality Criteria for the revised Project

Environmental Value	Air Quality Indicator	Goal	Averaging Period	Number of Allowable Exceedances	Source
Human health	PM <sub>10</sub>	50 µg/m <sup>3</sup>	24 hours	5 per year	EPP(Air)
	TSP	90 µg/m <sup>3</sup>	Annual	None	EPP(Air)
Amenity (nuisance)	TSP	80 µg/m <sup>3</sup>	24 hours	None	NZME, 2001
	Dust deposition	120 mg/m <sup>2</sup> /day	1 month	None	DEHP, 2013

The air quality goals for PM<sub>2.5</sub> in the EPP(Air) Act have not been adopted for the revised Project. The primary source of PM<sub>2.5</sub> emissions is combustion activities. NAC is not undertaking any significant combustion activities at the Mine or proposing to undertake any as a component of the revised Project.

### 1.4. Responsibilities

The key responsibilities of NAC and the New Hope Group (NHG) under the AQIMP are defined in Table 1-2.

Table 1-2 Responsibilities of NAC and NHG staff relating to the AQIMP

Role	Responsibilities
Mine Management	<ul style="list-style-type: none"> <li>Ensuring the Mine Environmental Team is adequately resourced to achieve the best possible environmental management at the Mine, including implementation and maintenance of the AQMP.</li> <li>Ensuring the Mine possesses an efficient and focussed concerns management procedure to properly manage legitimate concerns in a timely manner.</li> <li>Ensuring the Mine possess an adequate community consultation strategy.</li> </ul>
Mine Environmental Officer	<ul style="list-style-type: none"> <li>Ensuring best efforts are applied to achieve compliance with the conditions of the EA.</li> <li>Provision of the necessary resources (internal and external) to ensure the monitoring requirements of the EA are satisfied.</li> <li>Educating the relevant Mine staff and contractors in the requirements of the AQMP.</li> <li>Informing the DEHP of all instances of non-compliance with the</li> </ul>

Role	Responsibilities
	<p>conditions of the EA in the required timeframes.</p> <ul style="list-style-type: none"> <li>● Preparation of as required or requested information for submission to the DEHP including air quality monitoring data.</li> <li>● Ensure compliance with site concerns handling procedure to ensure that concerns are investigated in a timely manner and as required the implementation of management measures to reduce the likelihood of similar concerns being generated in the future.</li> <li>● Liaising with the DEHP with respect to all significant air quality matters.</li> </ul>
Mine Graduate Environmental Officer	<ul style="list-style-type: none"> <li>● Assisting the Mine Environmental Officer in maintaining compliance with the conditions of the EA by:</li> <li>● ensuring efficient day-to-day management of the environmental monitoring network and data; and</li> <li>● implementation of all relevant actions of the AQMP.</li> </ul>
NHG Corporate Office Environmental Staff:- Principal Environmental Advisor and Senior Environmental Officers	<ul style="list-style-type: none"> <li>● Provision of as required support to Mine management and the Mine Environmental Team to update management plans, implement new dust control measures and investigate significant air quality concerns.</li> <li>● Provision of as required support to Mine management and the Mine Environmental Team for significant regulatory and community matters.</li> </ul>

## 2. Background Information

This section presents background information from the air quality assessment that has been used to inform the development of the air quality management strategy.

### 2.1. Air Emissions Sources

The major air emission source from the revised Project will be suspended particulate matter, or dust. During operations, the main emissions to air are particulate matter generated by the onsite mining activities which primarily occur as a result of the following activities:

- excavation of coal and overburden;
- bulldozer and grader operations;
- loading/unloading of haul trucks;
- wheel generated dust from haul trucks and other vehicles;
- drilling and blasting activities;
- wind erosion from disturbed areas and stockpiles;
- conveyors/ transfer points at Coal Handling and Preparation Plant (CHPP);
- stacker and reclaimer operations at the Material Handling Facility (MHF); and
- operation of the Train Loadout Facility (TLF).

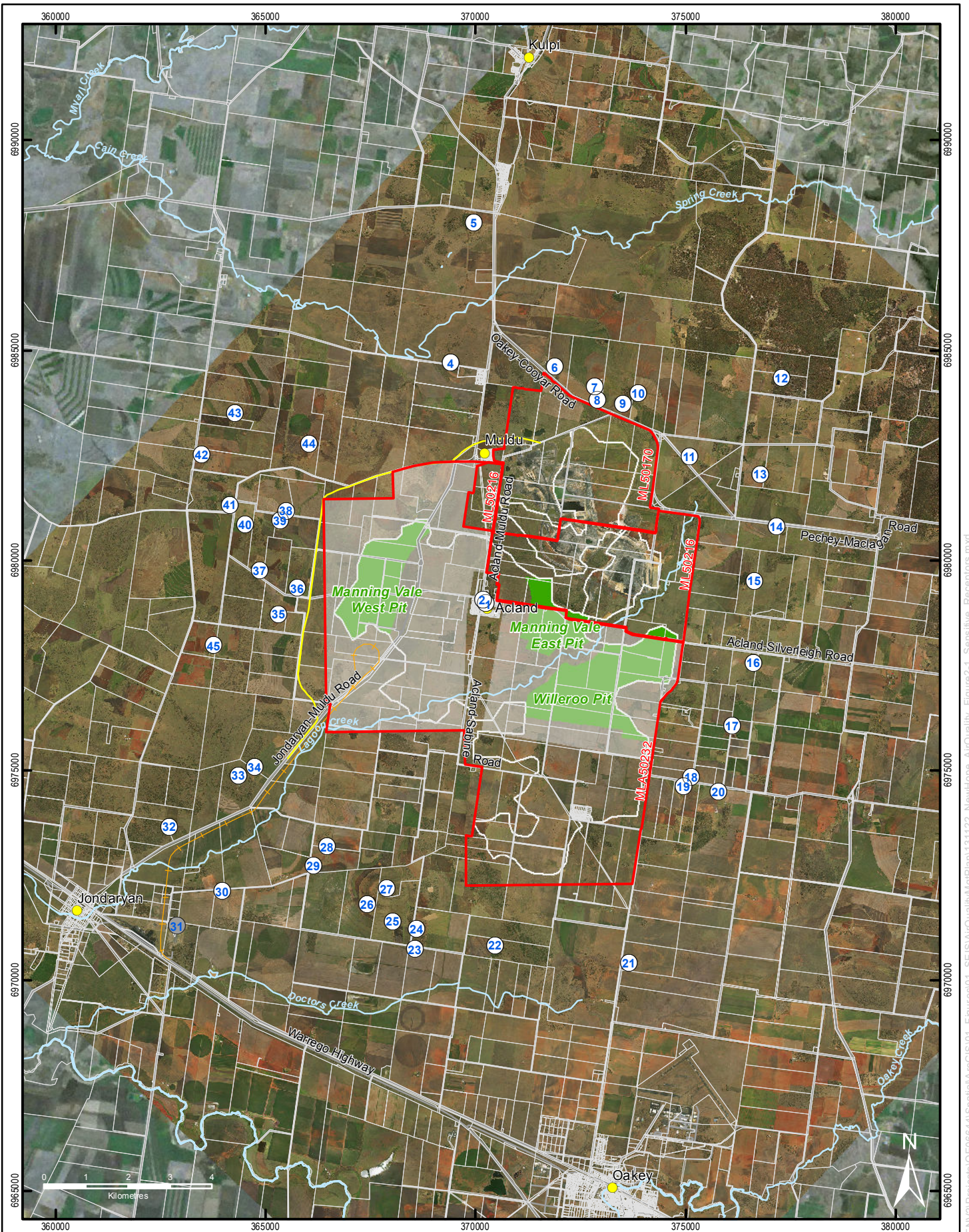
Blasting conducted for the revised Project possesses the potential to generate oxides of nitrogen (NO<sub>x</sub>) fumes dependant on individual shot characteristics. The air quality objective for NO<sub>2</sub> in the EPP (Air) are not expected to exceeded based on air quality monitoring of blasting at two mines in the Hunter Valley, NSW (Attalla *et al.*, 2007). Fume management procedures are detailed in Section 3.1.

Combustion of diesel in heavy machinery and ancillary equipment for the Project will generate carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), and sulphur dioxide (SO<sub>2</sub>). However, due to the low levels of emissions, gas dispersion characteristics and distance from air emissions sources to the sensitive receptors these compounds are unlikely to exceed the air quality objectives in the EPP(Air).

The amount, composition and size of the revised Project's dust emissions will be influenced by a number of factors, including the nature of the source materials disturbed or handled (e.g. topsoil), the intensity of on-site activities, the climatic conditions being experienced, and the degree of dust mitigation measures being applied during mining operations.

### 2.2. Air Emissions Sources

Sensitive receptors are locations which have the potential to be impacted by air emissions from a project. The nearest sensitive receptors to the revised Project are presented in Figure 2-1.



**LEGEND**

- Towns and Localities
- Sensitive Receptor - Residential
- Sensitive Receptor - Commercial
- Rail Spur
- Jondaryan-Muldu Road Diversion
- Creeks
- Mining Tenements
- Proposed Extent of Surface Rights Area
- Stage 3 Pit Areas



**NEW ACLAND COAL MINE  
STAGE 3 PROJECT**

**Figure 2-1 - Sensitive Receptors near  
the revised Project**

Scale 1:120,000 on A4

Projection: Australian Geodetic Datum - Zone 56 (AGD84)



### 2.3. Potential for Impacts

The prevailing wind direction on site is easterly, although westerly winds do occur on site particularly during the winter period.

An air quality assessment has been undertaken for the revised Project using CALPUFF to predict PM10 and TSP concentrations and dust deposition rates at sensitive receptors for three operating scenarios. Air dispersion modelling for the revised Project has predicted air quality will meet the EPP (Air) at 38 of the 44 sensitive receptors. The dispersion modelling indicates there is potential for air quality impacts at:

- sensitive receptor 1 due to mining operations in Manning Vale East Pit;
- sensitive receptors 35, 36, 37, 38 and 39 due to mining operations in Manning Vale West Pit; and
- sensitive receptor 3 due to activities at the ROM Pad, CHPP and MHF.

Most predicted exceedances occurred in the winter period from April to August. This period has a higher proportion of very stable atmospheric conditions and associated poor dispersion of pollutants.

The main dust sources that have the potential to impact on the sensitive receptors are overburden activities (dozer, hauling and dumping), dozers on the coal floor and wind erosion from exposed areas.

### 3. Air Quality Management Strategy

This section details the proposed approach to minimise the potential for air quality impacts from the revised Project including:


- Minimising Air Emissions;
- Dust Forecasting System;
- Air Quality Monitoring;
- Adaptive Air Quality Management;
- Local Stakeholder Engagement;
- Reporting; and
- Auditing.



#### 3.1. Minimising Air Emissions




The air quality management actions to reduce emissions from mining operations are presented in Table 3-1. The management approaches for dust sources from the revised Project are generally in line with best practice dust management practices defined in



- Environmental compliance and performance report: Management of dust from coal mines (DECCW, 2010); and
- NSW Coal Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (Katestone Environmental, 2010).

Table 3-1 Actions to minimise air emissions from the revised Project

Mine Activity	Dust Control Measures
<p>Material extraction and handling</p> 	<p>Loading/dumping overburden</p> <ul style="list-style-type: none"> <li>• The drop height of material from excavators will be minimised when loading trucks.</li> <li>• Modification of operations will occur during adverse weather conditions (e.g. dust storms, gale force winds and storm conditions).</li> <li>• Water carts will be employed to keep mine roads and work areas in a moist condition.</li> <li>• Dozer operations on overburden dumps will be modified or suspended if dust generation is excessive.</li> </ul>

Mine Activity	Dust Control Measures
<p>Drilling and blasting</p> 	<ul style="list-style-type: none"> <li>• Dust curtains will be installed on drill rigs (i.e. under the drill deck with fabric filters to collect dust).</li> <li>• Water injector will be used on drill rigs to minimise dust emission.</li> <li>• Local residents (neighbours) will be advised of blasting events (date and time).</li> <li>• Blasting operations will be modified during adverse weather conditions (e.g. dust storms, gale force winds and storm conditions).</li> <li>• Blasts will occur during daytime hours only and not on weekends or public holidays.</li> <li>• Gravel/basalt stemming will be used in blast holes.</li> <li>• A pre-blast environmental checklist will be used. Key actions will include::             <ul style="list-style-type: none"> <li>+ Review of the current weather forecast.</li> <li>+ Establishment of 300 m and 500 m minimum machine and personnel exclusion zones, respectively.</li> <li>+ Establishment of a Fume Management Zone based on expected meteorological conditions.</li> <li>+ Neighbours on blast contact list will be notified of whether their residence is in the fume management zone.</li> <li>+ A portable weather station will be set up to monitor field meteorological conditions.</li> <li>+ Blast will only be conducted when meteorological conditions are favourable.</li> <li>+ Relevant blast data will be captured, recorded, and as required reviewed.</li> </ul> </li> </ul>
<p>Haul roads</p> 	<ul style="list-style-type: none"> <li>• Water carts will maintain moisture conditions on haul roads.</li> <li>• Road grading and maintenance will be undertaken on a regular basis (refer to Standard Operation Procedure (SOP 05 12.02 Maintain and Water Mine Roads in Appendix A.2). Key actions include:             <ul style="list-style-type: none"> <li>+ Application of coarse rejects on haul roads to reduce dust generation.</li> <li>+ Grading procedures to achieve constant spread of fines and coarser material.</li> </ul> </li> <li>• Speed on haul roads will be limited to 60km/h (20 km/h on selected corners).</li> <li>• Where feasible, the volumes of trays on haul trucks will be maximised to increase carrying capacity and to reduce vehicle kilometres travelled on haul roads.</li> <li>• Visual monitoring of haul roads and major work areas will be undertaken to identify noticeable dust generation for corrective actioning.</li> <li>• Certain site roads will be sealed (near administration area – site access and employee car park).</li> </ul>

Mine Activity	Dust Control Measures
	<ul style="list-style-type: none"> <li>• Efficient watering will be conducted during peak periods of activity and within areas of concentrated activity.</li> <li>• Well defined and planned haul routes and internal roads will be developed to maximise efficiency of travel.</li> <li>• Obsolete mine roads will be rehabilitated.</li> <li>• The private haulage route from the Materials Handling Facility to Train Loading Facility will be a sealed road.</li> </ul>
<p>Exposed areas</p> 	<ul style="list-style-type: none"> <li>• The pre-strip areas will be planned to minimise the time of exposure following clearing in advance of mine development.</li> <li>• Exposed areas/active areas will be watered if dust generation is observed.</li> <li>• Where possible, topsoil will be stripped when its moisture content is elevated but not sodden.</li> <li>• A vegetative cover will be established as soon as feasible on areas prepared for rehabilitation.</li> <li>• Progressive rehabilitation will be conducted behind the active pit areas to minimise exposed areas.</li> <li>• Unauthorised clearing of non-mine areas will be prevented using a 'permit to disturb' system.</li> </ul>
<p>ROM Pad</p> 	<ul style="list-style-type: none"> <li>• Water will be applied on a regular basis by a water cart on trafficked areas within the ROM Pad's operational area.</li> <li>• Visual monitoring of ROM coal stockpiles will undertaken to identify noticeable dust generation for corrective actioning.</li> <li>• Water will be applied on the ROM coal stockpiles if significant dust levels are being generated.</li> </ul>
<p>Coal Handling and Preparation Plant &amp; ROM Bin</p> 	<p>ROM Bin</p> <ul style="list-style-type: none"> <li>• Automatic water sprays will be installed at the ROM hopper bin to produce a fine mist to suppress dust generated when sensors are triggered.</li> </ul> <p>Surge Bin</p> <ul style="list-style-type: none"> <li>• Dust curtains will be installed.</li> <li>• Waters sprays will be used.</li> </ul> <p>Crushing</p> <ul style="list-style-type: none"> <li>• Wet crushing will be employed.</li> <li>• This activity will be fully enclosed.</li> </ul> <p>Conveyors</p> <ul style="list-style-type: none"> <li>• Water sprays will be used on transfer points.</li> </ul>
<p>Material Handling Facility</p>	<ul style="list-style-type: none"> <li>• An automatic sprinkler system will be employed to moisten product coal stockpiles.</li> <li>• Water sprays will operate at transfer points on conveyors.</li> <li>• Coal spills will be removed regularly to minimise the potential for dust generation.</li> </ul>

Mine Activity	Dust Control Measures
	<ul style="list-style-type: none"> <li>• A vacuum sweeper will operate on roads near the Materials Handling Facility.</li> <li>• The washed coal will normally retain a moisture level of approximately 10%.</li> </ul>
<p><b>Train Loadout Facility</b></p> 	<ul style="list-style-type: none"> <li>• No coal will be stored in open/exposed stockpiles.</li> <li>• An enclosed overhead bin will deliver the coal to each rail wagon as part of the train loadout system.</li> <li>• Coal will be loaded by side tipper into a hopper as part of the train loadout system.</li> <li>• Veneering and profiling of the loaded coal will be conducted to minimise dust emissions during transport.</li> </ul>

### 3.2. Dust Forecasting System

NAC proposes to implement a dust forecasting system to provide daily predictions of upcoming meteorological conditions for use in the proactive assessment of potential risks from air quality impacts from the revised Project's mining operations.

The dust forecasting system predicts potential risk of air quality impacts using dispersion modelling tools for up to two days in advance. The dust forecasts will be updated on a daily basis, generating a daily automated email of forecast meteorological conditions and dust risk.

Predictions from the dust forecasting system will allow operators to identify locations and times of potentially increased risk, and to facilitate appropriate planning to minimise or avoid potential impacts. Planned adaptive management measures for key sources of dust from mining operations are outlined in Section 3.4.

Significant air quality issues are highlighted at shift change between the Production Supervisors or are conveyed to the general workforce on a regular basis through 'Tool Box Talks'. This approach ensures the day-to-day business focuses on good work practices to help reduce the potential for air quality impacts from the revised Project.

### 3.3. Air Quality Monitoring

The proposed air quality monitoring program for the revised Project consists of

- Tapered Element Oscillating Microbalances (TEOMs) for real time measurement of PM10 concentrations;
- Tapered Element Oscillating Microbalances (TEOMs) or Beta Attenuation Monitors (BAMs) for real time measurement of Total Suspended Particulates (TSP);
- High Volume Air Samplers for measurement of PM10 particulates;
- Dust Deposition Gauges for measurement of general dust fall out; and a
- Meteorological Station for the measurement of local weather conditions.

The locations of air quality monitoring equipment for the revised Project are presented in Figure 3-1.

The proposed number of monitoring equipment, frequency of monitoring and relevant monitoring standards are summarised in Table 3-2. The siting and installation of air quality monitoring instruments will be in accordance with the requirements of AS/NZS 3580.1.1:2007 Methods for sampling and analysis of ambient air. Part 1.1: Guide to siting air monitoring equipment.

Table 3-2 Air Quality and Meteorological Monitoring around the Project

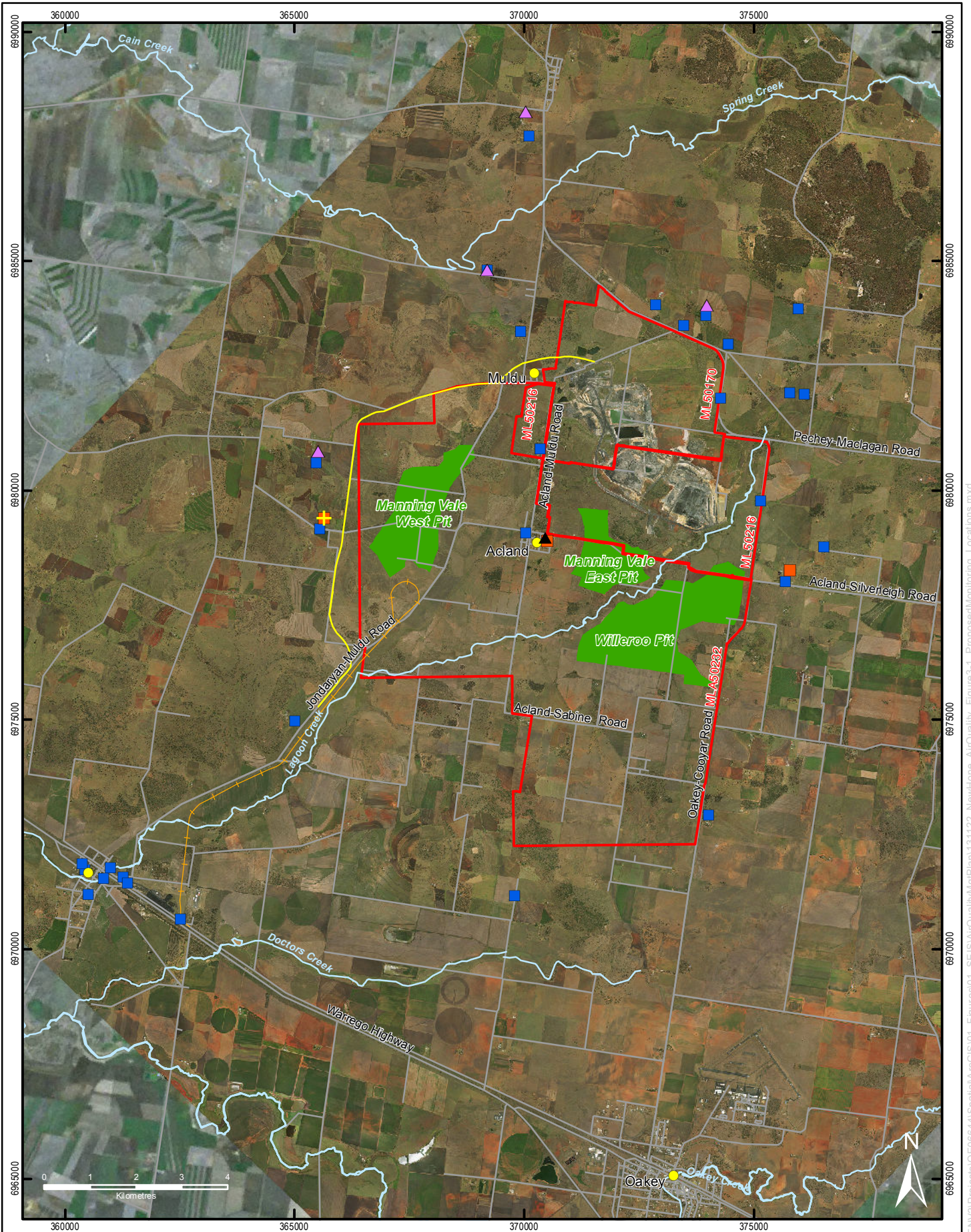
Instrument	Indicator	Frequency	Locations	Relevant Standard
TEOMs	PM <sub>10</sub>	Real-time	Refer to Figure 3-1	AS/NZS 3580.9.8:2008
TEOMs/BAMs	TSP #	Real-time	Refer to Figure 3-1	AS/NZS 3580.9.8:2008/ AS 3580.9.11:2009
High Volume Samplers	PM <sub>10</sub>	Quarterly	Refer to Figure 3-1	AS/NZS 3580.9.6:2003
Dust Deposition Gauges	Insoluble solids	Monthly	Refer to Figure 3-1	AS/NZS 3580.10.1:2003
Meteorological Station	Wind speed, wind direction	Hourly	Refer to Figure 3-1	AS 3580.14:2011

# there are no specific standards for measurement of real time TSP. The TEOM/BAM requires a suitable size-selective inlet to monitor TSP.

As required, compositional analysis of deposition samples or other localised dust fallout environments (e.g. exposed residential building surfaces or rainwater tank sludge of nearby sensitive receptors) may be undertaken periodically.

The rationale for each component of the air quality monitoring program is:

- Real time PM<sub>10</sub> – determine compliance with EPP (Air) objective of 50 µg/m<sup>3</sup> and facilitate adaptive air quality management;
- Real time TSP – determine potential nuisance impacts to the west of Mannging Vale West Pit and determine compliance with EPP (Air) objective of 90 µg/m<sup>3</sup>;
- Quarterly PM<sub>10</sub> monitoring - continue historical monitoring;
- Dust deposition gauges – determine potential nuisance impacts and to continue historical monitoring; and
- Meteorological Station – analysis of data to provide supporting data to assess potential for air quality impacts following any investigations of dust concerns raised.



**LEGEND**

- Towns and Localities
- Proposed real time PM<sub>10</sub> concentration
- ✚ Proposed real time TSP concentration
- ▲ Proposed Quarterly PM<sub>10</sub> Monitoring Locations
- Proposed Dust Deposition gauges
- ▲ Proposed Meteorological Station
- Rail Spur
- Roads
- Jondaryan-Muldu Road Diversion
- Creeks
- ▭ Mining Tenements
- ▭ Stage 3 Pit Areas



**NEW ACLAND COAL MINE  
STAGE 3 PROJECT**

**Figure 3-1 - Proposed Location of Air Quality Monitoring Equipment**

Scale 1:110,000 on A4  
Projection: Australian Geodetic Datum – Zone 56 (AGD84)

### 3.4. Adaptive Air Quality Management

The adaptive management measures will include the suspension or modification of operations in response to the following triggers:

- potential dust risk predictions from the dust forecasting system;
- real time air quality monitoring data activating a 'limit based' alarm system; and
- visual monitoring of operations.

The Adaptive Air Quality Management framework for the revised Project is presented in Table 3-3. NAC will continue to expand its corrective actions list for air quality management over the life of the revised Project.

Table 3-3 Adaptive Air Quality Management Framework

Scenario	Action	Responsibility
Routine inspections identify visible dust generated from haul roads or other active work areas.	<ul style="list-style-type: none"> <li>• The Production Supervisor/Open Cut Examiner is notified.</li> <li>• The Production Supervisor/Open Cut Examiner will arrange for a Water Truck to apply water where required.</li> <li>• The Production Supervisor/Open Cut Examiner may direct the Water Truck to concentrate greater effort at identified problematic areas.</li> </ul>	Production Supervisor/Open Cut Examiner, Production Superintendent
Visible dust generated from ROM coal stockpile.	<ul style="list-style-type: none"> <li>• The Production Supervisor/Open Cut Examiner is notified.</li> <li>• The Production Supervisor/Open Cut Examiner will arrange for a Water Truck to apply water where required.</li> </ul>	Production Supervisor/Open Cut Examiner, Production Superintendent
Water cart not operational.	<ul style="list-style-type: none"> <li>• An additional Water Truck or alternative arrangement will be organised if a Water Truck is unavailable for greater than two shifts.</li> <li>• During this period, dust conditions will be closely monitored, and if necessary, mining operations will be reduced or relocated if visible (excessive) dust emissions appear to go beyond the Project's boundary for extended periods.</li> </ul>	Production Supervisor/Open Cut Examiner, Production Superintendent
Dust risk predicted from Manning Vale East Pit	<ul style="list-style-type: none"> <li>• Implement hierarchy of dust controls: <ul style="list-style-type: none"> <li>• Increase watering rate to haul roads and/or major work areas.</li> <li>• Suspension of overburden/interburden blasting if meteorological conditions are unfavourable.</li> <li>• Suspension of dozer operations on overburden dumps.</li> <li>• Suspension of night-time operations (6am - 6pm).</li> <li>• Suspension or modification of all or selected overburden and/or coal handling activities (including excavation, loading, dumping and</li> </ul> </li> </ul>	Production Superintendent, Technical Services Superintendent/ Environmental Officer



Scenario	Action	Responsibility
	hauling)	
Dust risk predicted from Manning Vale West Pit	<ul style="list-style-type: none"> <li>● Implement hierarchy of dust controls:               <ul style="list-style-type: none"> <li>● Increase watering rate to haul roads and/or major work areas.</li> <li>● Suspension of overburden/interburden blasting if meteorological conditions are unfavourable.</li> <li>● Suspension of dozer operations on overburden dumps.</li> <li>● Suspension or modification of all or selected overburden and/or coal handling activities (including excavation, loading, dumping and hauling)</li> </ul> </li> </ul>	Production Superintendent Technical Services Superintendent/ Environmental Officer
Dust risk predicted from Willeroo Pit	<ul style="list-style-type: none"> <li>● Implement hierarchy of dust controls:               <ul style="list-style-type: none"> <li>● Increase watering rate applied to haul roads</li> <li>● Suspension of overburden/interburden blasting if meteorological conditions are unfavourable.</li> <li>● Suspension of dozer operations on overburden dumps.</li> <li>● Suspension or modification of all or selected overburden and/or coal handling activities (including excavation, loading, dumping and hauling)</li> </ul> </li> </ul>	Production Superintendent Technical Services Superintendent/ Environmental Officer
TEOM records exceedance of dust trigger level (PM <sub>10</sub> 50 µg/m <sup>3</sup> 1 hour average) downwind of mining operations).	<ul style="list-style-type: none"> <li>● Environmental Officer/ Technical Services Superintendent/ Production Superintendent/ Production Supervisor will be notified via an alarm system if trigger levels are exceeded (i.e. SMS).</li> <li>● Additional dust management measures will immediately be implemented to help restore compliance (e.g. Water Truck to spray site roads, Dust Sweeper to sweep sealed roads, etc.).</li> <li>● An immediate causal analysis will be conducted to establish the problematic area(s) of operation.</li> <li>● If wind conditions are adverse, the following management actions may occur until compliance is re-established:               <ul style="list-style-type: none"> <li>● mining operations will be relocated on site,</li> <li>● the intensity of mining operations on site will be reduced, and/or</li> <li>● in extreme circumstances, mining operations on site will be stopped.</li> </ul> </li> <li>● All management actions taken will be recorded for reporting and/or concerns management purposes.</li> <li>● The DEHP will be advised of all non-compliant activations of the TEOMs/BAMs and the follow up actions completed to regain compliance.</li> </ul>	Production Supervisor Production Superintendent Technical Services Superintendent/ Environmental Officer General Manager

Scenario	Action	Responsibility
Air quality monitoring exceeds the specified EA limits, and/or desired goals (no concerns received).	<ul style="list-style-type: none"> <li>• NAC will review monitoring data, weather conditions and any field observations to determine if the Mine is responsible for the elevated results.</li> <li>• NAC will review current dust management measures on site and assess their effectiveness.</li> <li>• As required, NAC will develop and implement new management controls and amend the AQMP.</li> <li>• NAC will re-submit any amended editions of the AQMP to the DEHP.</li> </ul>	Environmental Officer/ Technical Services Superintendent Production Superintendent General Manager NHG Corporate Environmental Team (if required)

### 3.5. Local Stakeholder Engagement

Concerns and other issues raised will be managed in accordance with the revised Project's Local Stakeholder Management Plan. A register will record details of the concern, the complainant(s), a summary of the investigations completed, any management actions taken, and the status of the concern.

A twenty four hour telephone number is made available to near neighbours for receiving concerns. This 'fast response' approach is designed to ensure access to the NAC employee on site at the time with the necessary responsibility to take immediate actions if required. NAC's Environmental Team will be available for contact during business hours by email (with the email address available through a web-site), and by telephone through the Mine's reception.

A legible record of all concerns will be kept by NAC's Environmental Team, who are responsible for the revised Project's environmental concerns management. Each concern received in relation to the revised Project will be formally documented and record of the following information is maintained for legal and compliance purposes.

- 1) The date and time of concern.
- 2) The nature of concern (e.g. dust).
- 3) The method by which the concern was received (e.g. telephone).
- 4) The name and title of the person who receives the concern.
- 5) The personal details of the complainant, if made available, or if no details were provided, a note to that effect.
- 6) The action taken in relation to the concern, including any follow-up contact, the outcome of investigations and any required on-going actions.
- 7) If no action was taken, then the reason why no action was taken.
- 8) The final status of the concern (e.g. resolved, continuing or unresolved).

Standard actions taken by NAC's Environmental Team in relation to air quality (dust) concerns will include reviewing in relation to the time of the concern:

- meteorological data;
- relevant available air quality monitoring data; and
- mine operations.

Follow up actions taken by NAC's Environmental Team in relation to air quality (dust) concerns may include depending on circumstances:

- a site inspection of the complainant's residence;
- targeted sampling at the complainant's residence of:
  - general surface dust and/or rainwater tank sludge for compositional analysis, and/or
  - collected rainwater for water quality analysis;
- an investigation of other potential dust generating sources in the vicinity of the complainant's residence;
- if the complainant's residence is outside NAC's proactive air quality monitoring network, installation of an applicable monitoring station at the complainant's residence (e.g. dust deposition gauge); and
- engagement of an air quality specialist to assist the concerns investigation process.

NAC's Management, in particular the Production Superintendent, Technical Services Superintendent and General Manager, are normally fully apprised of all concerns to ensure the key decision makers for mining operations, mine planning and the Mine, respectively, are involved in the concerns management process. As required, the NHG's Corporate Environmental Team may assist with management of the concern.

NAC is committed to rectifying all air quality issues that are legitimately attributed to the revised Project's operations through proper scientific evaluation, in an appropriate timeframe, using accepted and practical mitigation measures, and if reasonably possible, to the satisfaction of the affected party.

### **3.6. Reporting**

NAC will advise the DEHP in a timely manner of all non-compliances identified in relation to the revised Project's future EA (e.g. 'exception reporting').

If a definite case where material or serious environmental harm or the potential for material or serious environmental harm is clearly established by an air quality investigation into an unforeseen impact, NAC will ensure the notification requirements of Section 320 of the Environmental Protection Act 1994 are fully addressed.

NAC envisage that it will also be bound to report all environmental incidents as a requirement of its future EA for the Project (i.e. based on the same requirement for the current Mine).

As required, NAC will prepare and submit to the DEHP any requested information about environmental management and other related matters in relation to the revised Project's operations, including air quality monitoring data.

### 3.7. Auditing

Over the life of the revised Project, NAC will regularly audit the performance of the AQMP using both internal and third party auditing processes. Internal and third party audits will be conducted on annual and three yearly timeframes, respectively. The audit process will generally be designed to examine the status of the key components of the AQMP, review air quality concerns management, and evaluate the overall performance of NAC's air quality management for the revised Project. The strategy for NAC's audit processes is to ensure compliance and promote continuous improvement as part of the revised Project's air quality management regime.

In addition, NAC's AQMP will be subject to potential audit by the DEHP during Compliance Inspections and other site inspections, and as a possible component of a formal air quality concerns investigation process.

NAC will continue to review the dispersion modelling over the life of the revised Project, and in particular, will compare collected monitoring data and the modelled results at specific locations (e.g. sensitive receptors) to help guide future air quality mitigation strategies ahead of the mine path.

## 4. References

AS/NZS 3580.1.1:2007, Methods for sampling and analysis of ambient air. Part 1.1: Guide to siting air monitoring equipment

AS/NZS 3580.9.6:2003, Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM<sub>10</sub> high volume sampler with size-selective inlet - Gravimetric method

AS/NZS 3580.9.8:2008, Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser

AS/NZS 3580.9.11:2008, Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM<sub>10</sub> beta attenuation monitors

AS/NZS 3580.10.1:2003, Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method

AS 3580.14:2011, Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications

Attalla, M.I, S.J Day, T. Lange, W. Lilley and S. Morgan,S (2008) NOx emissions from blasting operations in open-cut coal mining, Atmospheric Environment 42 (2008) 7874–7883

Department of Environment Climate Change and Water (DECCW), 2010, Environmental compliance and performance report: Management of dust from coal mines.

Department of Environment and Heritage Protection (DEHP), 2013, Guideline: Model mining conditions, version 4 issued 26 June 2013. Available at <http://www.ehp.qld.gov.au/land/mining/pdf/model-mining-conditions-em944.pdf>

Environmental Protection Act 1994

Environmental Protection (Air) Policy 2008

Katestone Environmental, 2010, NSW Coal Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining.

New Zealand Ministry for the Environment (NZME), 2001, Good practice guide for assessing and managing the environmental effects of dust emissions, published by Ministry for the Environment, Wellington, New Zealand

## **Appendix A Standard Operational Procedures**

## **A.1 Duty Card 14 Fume Management**

**NEW ACLAND COAL  
DUTY CARD 14  
Fume Management**

**Prior to design of blast**

- Follow Blast Controller's Work Instruction (Appendix 2 SOP: Charging and Firing of Explosives)
- Ensure all inputs are considered in the design phase (as per the Pre-Blast TARPS)
- Ensure the blast pack contains the following:
  - Pre-Blast TARP forms completed
  - 400m minimum exclusion zone (lightning)
  - 300m and 500m minimum machine and personnel exclusion zone
  - Fume Management Zone
  - Notification Zone with contacts of relevant parties outside the lease
  - Blast guard locations
  - Drill pattern holes and annotation
  - Fume Data Checklist
  - NOx rating scale
  - A copy of the PHMP Post-Blast TARP
  - A copy of the Information Letter and Doctor's letter re NOx
  - A collection of the daily data such as load sheets, cart notes...etc
- Document and communicate any expected outcomes (fume, ejections, vibration, overpressure, face blasts)

**During the week of loading**

- Follow the Blast Controller's and ShotFirer's Work Instruction (Appendix 2 SOP: Charging and Firing of Explosives)
- If any change/deviation to the plan occurs - the Pre Blast TARP must be completed again before proceeding
  - Any change must also be COMMUNICATED sa a minimum to Maxam and NAC Blast Controller/Engineer
- Sign off before the day of blasting must occur from the Drill and Blast Co-Ordinator (or their delegate) and the Shotfirer

**On The Day of Blasting**

- Follow the Blast Controller's, ShotFirer's, and Blast Guard's Work Instruction (Appendix 2 SOP: Charging and Firing of Explosives)
- Denote weather on Exclusion and Fume Management zone plan (wind direction and speed)
- Blast Controller and Shotfirer to sign off on Exclusion and Fume Management zone

**After the Shot**

- Is there Fume? **NO** - Capture And record all relevant data And complete fume register
- Is there Fume? **YES** - Manage the event, treat people in the event of an exposure, initiate Post Blast TARP actions where required
  - Report immediately (SSE/Safety and Health/Inspectorate)
  - Collect and collate data, start investigation

DUTY CARD 14 – Fume Management



NEW ACLAND COAL  
**DUTY CARD 14**  
Fume Management

## 4. Reporting Fume (Monitor, Measure, Analyse)

### 4.1 No fume event occurs:

**Action:**

- Populate Fume Register
- Make note in the NAC Blast Register

**Responsibility:** Blast Controller

### 4.2 Fume event of severity < 4 occurs and disperses before the extent of blast guard locations is exceeded (blast guards can be directed to move or retreat as per the pre blast plan):

**Action:**

- Notify SSE and Safety & Training team on the day of event
- Populate Fume Register
- Make note in the NAC Blast Register
- Collect monitor data, photos, video, witness statements (density and ratings at peak of event) and meteorological data
- Investigate

**Responsibility:** Blast Controller

### 4.3 Fume event occurs at greater than or equal to 4 OR travels outside the blast guard locations:

**Action:**

- Trigger emergency response plan if required
- Treat any personnel in the event of an exposure or suspected exposure
- Raise incident and notify SSE and **Explosives** Inspectorate immediately
- Populate Fume Register
- Make note in the NAC Blast Register
- Collect monitor data, photos, video, witness statements (density and ratings at peak of event) and meteorological data
- Investigate

**Responsibility:** Blast Controller

### 4.4 Fume event occurs and travels outside of Blast Guard Locations and people/public affected, OR gives cause to an unexpected evacuation, OR the fume drifts offsite:

**Action:**

- Trigger emergency response plan
- Treat any personnel in the event of an exposure or suspected exposure (GP consult, provide with exposure letter, monitor for a minimum of 4-6hrs)
- \*Raise incident as HPI and notify SSE and **Both** Inspectorates (Mines and Explosives) immediately.  
*\* An Offsite event may not necessarily denote a HPI – requires consultation with Mines Inspectorate.*
- Populate Fume Register
- Make note in the NAC Blast Register
- Collect monitor data, photos, video, witness statements (density and ratings at peak of event) and meteorological data
- Investigate

**Responsibility:** Blast Controller

# NEW ACLAND COAL DUTY CARD 14 Fume Management

## Fume Data Checklist

Date:..... Time Fired:..... am/pm  
 Blast ID:..... Shotfirer:.....

**\*\*Instructions: Please circle the relevant answers below**

<u>Fume Rating:</u>	0				<u>Fume %</u>	
	1	a	b	c	<input type="checkbox"/>	0 - 25% of blast fumed
	2	a	b	c	<input type="checkbox"/>	26 - 50% of blast fumed
	3	a	b	c	<input type="checkbox"/>	51 - 75% of blast fumed
	4	a	b	c	<input type="checkbox"/>	100% of blast fumed
	5	a	b	c		

Fume Visual after the blast: Visible instantly Yes  
 Visible < 5mins No  
 Visible > 5mins No

Any slumping holes: Yes  
 No

Fume Visibility after the blast: Stayed low after the blast  
 Came out of shot material  
 Came out through the face  
 Directly into the air

Holes had water in them: Yes  
 No

Fume Location: From initiation point  
 Rear of the blast  
 Middle of the blast  
 Buffered end  
 Corner of blast

Damp sides: Yes  
 No

Fume Location (Product): Where ANFO was loaded  
 Where H/ANFO was loaded  
 Where pumpable was loaded  
 Where mixture of product

Were the holes dewatered: Yes  
 No

Rain during/after loaded: Yes  
 No

Weather during initiation: Sunny & no wind  
 Sunny & min wind  
 Sunny & windy  
 Cloudy & no wind  
 Cloudy & min wind  
 Cloudy & windy  
 Hot  
 Cold  
 Raining

Loaded to design: Yes  
 No

Video/photos of the blast: Yes  
 No

Hole by hole data captured: Yes  
 No

**Pre-Initiation \*Not mandatory, guideline only**

Blast Confinement: Fully Buffered  
 Half Buffered  
 Free Face  
 Box Cut

Any persons in direct path: Yes  
 No

Do you require evacuation: Yes  
 No

Type of stemming: Crushed Aggregate  
 Drill cuttings  
 Coal rejects  
 Sand  
 Gravel  
 Aggregate capped with drill cuttings

Plan in place if wind changes: Yes  
 No

Is the blast required today: Yes  
 (Can it be slept or are you  
 better off firing) No

All controls in place for firing: Yes  
 No

**Exposure to Fume \*Not mandatory, guideline only**

Wind speed in km/hr:.....

Emergency response initiated: Yes  
 No

Wind direction from the :.....

NOx PPM reading:.....(If Applicable)

Persons treated by doctor: Yes  
 No

Cloud cover (0 nil to 10 full).....


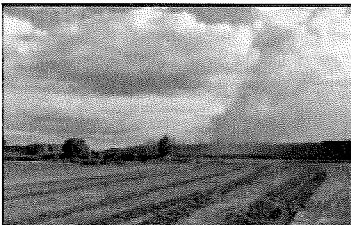



DUTY CARD 14 – Fume Management

**NEW ACLAND COAL**  
**DUTY CARD 14**  
**Fume Management**

**NOx Rating Scale**

Level 0	~	0ppm	Level 3	~	17ppm
Level 1	~	2ppm	Level 4	~	70ppm
Level 2	~	4ppm	Level 5	~	500ppm

DUTY CARD 14 – Fume Management

Level	Typical Appearance
<b>Level 0</b> No NOx gas	
<b>Level 1</b> Slight NOx gas	
1A Localised	
1B Medium	
1C Extensive	
<b>Level 2</b> Minor yellow/orange gas	
2A Localised	
2B Medium	
2C Extensive	
<b>Level 3</b> Orange gas	
3A Localised	
3B Medium	
3C Extensive	
<b>Level 4</b> Orange/red gas	
4A Localised	
4B Medium	
4C Extensive	
<b>Level 5</b> Red/purple gas	
5A Localised	
5B Medium	
5C Extensive	



## NEW ACLAND COAL DUTY CARD 14 Fume Management

DUTY CARD 14 – Fume Management

Weather		
Is the <b>STORM FORECAST</b> favourable?	Good	Bad
Is the wind <b>DIRECTION</b> favourable?	Yes	No
Is the wind <b>SPEED</b> strong or weak?	Weak	Strong
Is there evidence of a <b>TEMPERATURE INVERSION</b> ?	No	Yes
Is there <b>CLOUD COVER</b> ?	No	Yes
Is <b>SURFACE WATER</b> present?	No	Yes
How is the <b>ATMOSPHERE STABILITY</b> (Stable or Unstable)?	Stable	Unstable
<p>If you circled the second answer for any of the above - provide more details on the likely effect these will have on fume and ensure this has been dealt with.</p> <hr/> <hr/>		

Geology		
Does the ground have a history of being <b>REACTIVE</b> ?	No	Yes
Is there, or has <b>GROUND WATER</b> been noted in this pattern?	No	Yes
Are there <b>GEOLOGICAL STRUCTURES</b> such as faults, basalt flows, intrusions, noticeable joint sets, erosion, weathering, and/or banding of hard and soft occurring?	No	Yes
Is the pattern in a <b>UNIFORM MATERIAL</b> laterally or does the pattern cross material types (i.e. half the shot is in basalt and half in clays)?	Yes	No
Has the <b>TOPOGRAPHY</b> been noted to account for hollows, hills, wind buffers, etc?	Yes	No
<p>If you circled the second answer for any of the above - provide more details on the likely effect these will have on fume and ensure this has been dealt with.</p> <hr/> <hr/>		

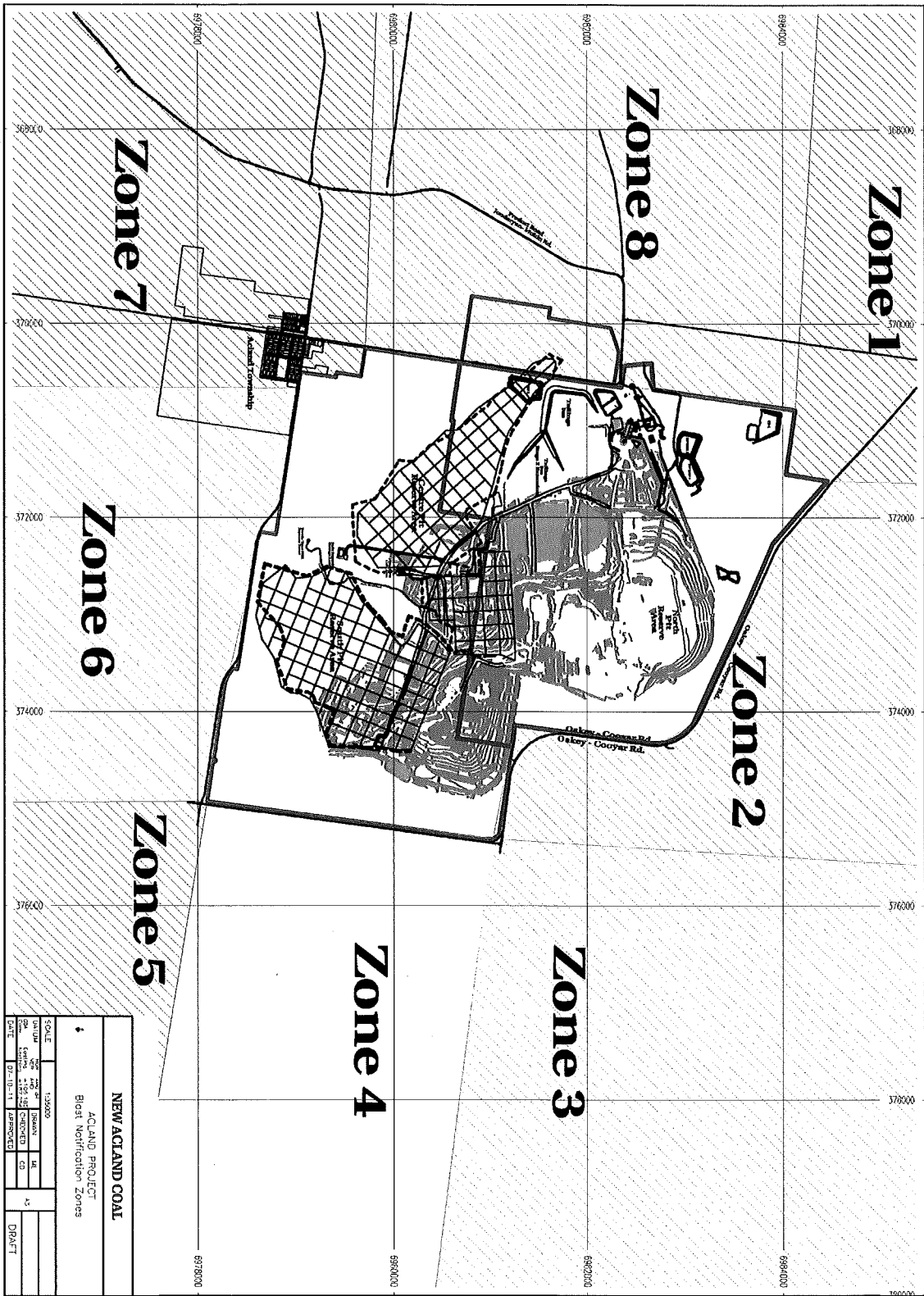
Product		
Is the <b>PRODUCT</b> considered <b>SUITABLE</b> for the <b>WET OR DAMP</b> ground conditions (water gels for wet, anfo for dry)?	Yes	No
Is the <b>PRODUCT</b> considered <b>SUITABLE</b> for the ground <b>TYPE</b> (weathered, massive, heavily jointed or faulted, soft)?	Yes	No
Are the <b>HOLE DIAMETER</b> adequate for the product (critical hole diameter)?	Yes	No
Are the holes <b>ADEQUATELY PRIMED</b> (over 12m requires double baiting)?	Yes	No
Is the <b>SLEEP TIME</b> of this shot considered <b>ACCEPTABLE</b> ?	Yes	No
Is the <b>PRODUCT QUALITY</b> acceptable for <b>DENSITY AND BLEND</b> accuracy?	Yes	No
Was there any <b>RAW MATERIAL ISSUES</b> with this shot?	No	Yes
<p>If you circled the second answer for any of the above - provide more details on the likely effect these will have on fume and ensure this has been dealt with.</p> <hr/> <hr/>		

Practice		
Was there any noticeable issues with <b>DIPPING ACCURACY</b> ?	No	Yes
Have <b>PRIMERS</b> been correctly deployed?	Yes	No
Has any issues around <b>HOSE</b> and <b>AUGERING PRACTICES</b> arisen over the loading of this shot?	No	Yes
Has there been any <b>COLUMN RISE</b> issues with this shot?	No	Yes
Are the <b>DENSITIES</b> and <b>PRODUCT SPECIFICATIONS</b> to design?	Yes	No
Has the shot been <b>STEMMED</b> adequately?	Yes	No
Has <b>SLUMPING</b> been noted on any loaded holes?	No	Yes
<p>If you circled the second answer for any of the above - provide more details on the likely effect these will have on fume and ensure this has been dealt with.</p> <hr/> <hr/>		

Design		
Has the design incorporated <b>CONFINEMENT</b> issues (e.g. underconfinement in weak zones, or overconfinement in terms of free faces and hard material)?	Yes	No
Is <b>PRODUCT SELECTION</b> adequately matched to material and hole types?	Yes	No
Does the design <b>REFLECT WHAT ACTUALLY HAPPENED</b> on the pattern?	Yes	No
Is the <b>INITIATION PLAN</b> suitable?	Yes	No
Is the <b>SIZE OF THE SHOT</b> suitable?	Yes	No
Is the pattern <b>BURDEN AND SPACING</b> sufficient?	Yes	No
Has <b>PREVIOUS SHOT EXPERIENCE</b> or <b>HISTORICAL DATA/LEARNINGS</b> been incorporated into the design?	Yes	No
<p>If you circled the second answer for any of the above - provide more details on the likely effect these will have on fume and ensure this has been dealt with.</p> <hr/> <hr/>		

Is Fume Expected?	Yes
Expected Rating?	5
This shot is predicted to be a:	<b>Level</b>
<p>Make sure the shot is manageable under the <b>FMZ</b> - delay shot if required</p>	
Shotfirer Signoff _____	
Blast Controller Signoff _____	

**NEW ACLAND COAL  
DUTY CARD 14  
Fume Management**



DUTY CARD 14 – Fume Management

<b>NEW ACLAND COAL</b>	
ACLAND PROJECT	
Blast Verification Zones	
SCALE	1:25000
DRAWN	MM
CHECKED	CD
DATE	07-10-11
DRAFT	

NEW ACLAND COAL  
**DUTY CARD 14**  
 Fume Management

Coal mine workers  
**FACT SHEET**  
 Avoiding exposure to oxides of nitrogen (NO<sub>x</sub>) fumes from surface blasts

**What are blast fumes?**

Blast fumes are the gases that may be generated during blasting.

Some of these gases can affect health, including oxides of nitrogen [nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>)]. NO<sub>2</sub> is the more toxic of the two.

**What do blast fumes look like?**

They are typically a reddish/orange cloud – NO<sub>2</sub> is what gives the cloud this colour and the colour becomes deeper with higher concentrations of NO<sub>2</sub>.

Blast fumes also have a pungent odour and taste.



Blast fume generated after a shot

**What do I do if am exposed to a blast fume?**

Immediately report exposure to your supervisor and follow the site medical plan. If you have been examined and released by a medical practitioner but later develop symptoms, you must seek urgent medical attention.

**Tolerable exposure**

There is a level of tolerable exposure that people can deal with. The short-term exposure limit (STEL) for NO<sub>2</sub> is 5 parts-per-million (ppm). STEL exposures should not be longer than 15 minutes and should not be repeated more than four times a day with at least 60 minutes between successive exposures.

Mine sites should work towards preventing fume generation, but where this is not possible, fume exposures must be kept below the STEL.

**If I can smell NO<sub>2</sub> does it mean I have been over exposed?**

No. NO<sub>2</sub> has a very strong acrid odour that can be smelled at much lower levels than the tolerable limits. At these low levels, the effects are extremely unlikely to be harmful to

health, particularly if the reddish/brown gas is not visible. NO<sub>2</sub> above 2.5 ppm is visible. Higher concentrations above 4 ppm may deaden the sense of smell.

**Symptoms from high exposure**

- eye irritation and coughing
- initial dizziness and/or headache (may subside)
- shortness of breath
- 5–8 hours later, cyanosis (blue lips, fingertips)

**What can I do to prevent being exposed?**

- Comply with blast-exclusion zones and fume-management zones.
- Inform blast controller of fume clouds and their location and movement.
- Do not enter or remain in fume clouds.
- Move out of fume cloud path.
- Wear gas monitors if directed.

NO<sub>x</sub> can be measured using portable gas detectors. Ensure monitors are calibrated and set correctly before use.

**Nitrogen dioxide (NO<sub>2</sub>) concentrations for odour, visibility and 'immediate danger to life and health' (IDLH)**

Odour threshold	0.12 ppm
Visible	2.5 ppm
Any atmosphere in which nitrogen dioxide (NO <sub>2</sub> ) is noticeable by smell, irritation and colour should be regarded as potentially dangerous.	3 ppm – 5 ppm
Specific symptoms may materialise above this level and can result in immediate danger to life and health (IDLH). IDLH is defined as exposure to airborne contaminants that are likely to cause death or immediate or delayed adverse health effects, or prevent escape from such an environment.	20 ppm+

**Further information**

Further information relating to blast-fume prevention, management and health effects can be found in the Queensland Guidance Note 20 'Management of oxides of nitrogen in open-cut blasting', available at [www.deedi.qld.gov.au](http://www.deedi.qld.gov.au)

## **A.2 Maintain and Water Mine Roads**





## **SAFETY and HEALTH STANDARD**

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<p style="text-align: center;"><b>Element – 05 12.02</b> <b>Maintain &amp; Water Mine Roads</b> <b>(SOP - CMS&amp;H Reg s129)</b></p>
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DOCUMENT OWNER: <b>Michael Henare</b> Mining Superintendent		PREPARED BY: <b>Darryl Shaw</b>			
APPROVED BY: <b>Jim Randell</b> Site Senior Executive		Signature: J Randell		Date: 19.11.2009	
title	date effective	revision status	set review	planned review	page
05 12 02 - Maintain and Water Mine Roads.doc	19.11.2009	Rev 4	3 yearly	19.11.2012	1 of 6

## 1. PURPOSE

To provide guidelines for the safe maintenance and watering of mine primary haul roads, mine roads and ancillary roads within the active mining area at New Acland Mine; and

To meet requirements of Coal Mining Safety and Health Regulation s129.

## 2. SCOPE

This Standard applies to the following:

- watering of mine roads.
- inspecting and monitoring mine roads.
- discharging water from water trucks.
- identifying risks of *over* or *under* watering.
- ensuring the safety of all mine road users.
- safe methods of operating the water truck.

## 3. PROCEDURE

### 3.1 Definitions

**Mobile Plant** means plant capable of being moved under its own power (see CMS&H Regulation – Schedule 9).

### 3.2 Communication of Road Maintenance or Watering

Prior to undertaking road maintenance, the Supervisor / OCE or Operator will communicate via two-way the location and nature of the work. Other persons who may use the roadway may need to be notified by other means.

Operators need to be vigilant and take note of any communication or presence of signage, barricades, flashing lights, etc. which may indicate road works. The reduction of speed and maintaining positive communication when approaching road maintenance plant is mandatory.

Water truck operators should respond to requests from equipment operators, OCE's or supervisors for road watering to control dust.

Water truck operators shall advise, by two-way, their intention to water in a particular area, including the watering of ramps.

### 3.3 Routine Inspection

The Production Supervisor (OCE) is required to conduct regular inspections of mining areas and roadways, throughout the shift and will notify relevant people and arrange rectification of hazards.

Individual operators of mobile equipment will, in addition to the Production Supervisor, conduct ongoing inspections of their work area and advise relevant personnel where additional road maintenance or watering is required.

title	date effective	revision status	set review	planned review	page
05 12 02 - Maintain and Water Mine Roads.doc	09.09.09	Rev 4	3 Yearly	09.09.12	2 of 6

### 3.4 Operation of Water Truck

The main purpose of the water truck is to spread water on to road surfaces in such a manner that dust is suppressed and unsafe conditions are not created.

Unsafe conditions may be created by either over or under watering. Over watering may create loss of traction for road users and soft sections in the road surface. Under watering may not control the dust hazard in the cycle of the water truck.

Water truck operators should check for correct water placement or otherwise check with road users to avoid over watering situations.

Factors to take into consideration include:

- Production requirements – the number of haul trucks using each ramp
- Time of day - roads will require less water at night
- Weather
- Length of road
- Roadworks requirements – water is essential for good compaction of the road, which then requires less maintenance to stay in good condition

It is necessary that the water truck operators understand the importance of application of water suitable to the type of road surface (material) and its intended use.

Haul roads will require more frequent watering due to the volume and the speed of traffic while access roads should only be watered as requested as many are not used regularly.

Ramps in the excavation must be watered with consideration to the operational requirements of the haul trucks using them – the water truck operator should spread water in a pattern (spot watering) down the ramp so that dry areas are left every **30 metres**. These areas will allow for emergency braking and, in addition, as the trucks travel over the wet areas they will spread the moisture.

#### NOTICE

**Spot water at intersections – allow for safe braking areas at approaches.**

While watering of the road is taking place the water truck operator shall ensure the blue flashing light is operating and clearly visible. The operator will also ensure that communication of intent to water roads and ramps is undertaken.

The water truck operator shall, at the start of each shift, test the fire monitor and controls for operation, as per the Conduct Water Truck Operations Manual.

#### NOTICE

**EMERGENCY RESPONSE – the closest Water Truck must respond to emergency scene – do not wait to be called – advise Emergency Controller of your response and volume of water. Second water truck to fill up and attend.**

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### 3.5 Other Road Maintenance Equipment

Graders and wheel / track dozers are used to maintain the surface and condition of the mine's roads in conjunction with the water truck.

The activity of these items of equipment may create some hazards such as:

- Affecting the normal traffic flow in that area
- Interaction with other equipment in the area, as they may operate contrary to the normal traffic flow
- Altering the roads surface
- Generating dust which may result in reduced visibility and possible health effects

To minimise the risks associated with this activity it is important that:

- Operators of this equipment notify, by two-way radio or signage (e.g. half road closed etc.), other operators that unusual activity is taking place in that area
- Access to the area is limited as required
- Work with the traffic flow where possible
- Maintain the correct safety berm height
- Complete the job, where possible, to ensure all created hazards are removed or ensure barriers or signage is in place to warn others of the situation.
- Flashing blue light shall be activated on equipment as per Traffic Rules.

#### Grading Roadways

Graders should grade material to one side of the haul road and then grade rilled material back in the opposite direction to achieve a constant spread of fines and coarser material. After grading in wet conditions, grader operators must open up affected drains to prevent water ponding on haul roads.

When large holes or depressions occur in haul roads these are to be filled with a suitable material. If this occurs in a defined "soft spot" it will require digging out to a sound base and competent material placed before track rolling and grading.

The grader operator is responsible for maintaining the haul roads to a satisfactory standard. As required, or as time becomes available, other site roads should be graded.

### 3.6 Risk Assessment

Where any of these steps cannot be followed, a JHA must be undertaken with careful consideration to the following:

- Interaction with other equipment and personnel in area
- Visibility
- Road surface and conditions (stability, material type, slumping, cracking)
- Limitations on work area (width of haul road/bench)
- Proximity to electrical powerlines, cables and services.
- Inclement weather

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- Type of terrain
- Presence of water
- Size and presence of safety berms
- Use of signage and other safety barriers
- Frequency of inspections
- Limiting access
- Communication of hazards and activity to other personnel who may be affected

#### 4. Communication / Training

All personnel affected by the content of this document will receive instruction or explanation on the relevant parts of the document.

Relevant sections of this Standard and associated procedures will be incorporated into our Safety Induction Program.

#### 5. References



Coal Mining Safety and Health Act – Qld. (1999)



Coal Mining Safety and Health Regulation – Qld. (2001)



New Acland Coal's SHMS Standards

- 05 12 RA01 - Mine Roads
- 05 12.01 - Design and Construction of Mine Roads

#### 6. Records

Records shall be maintained of all Authorisations to operate equipment – refer [\[03 11 – Training Scheme\]](#); and [\[14 00 – Records Management\]](#).

Records shall be maintained of all mobile equipment maintenance: including: inspections, corrective maintenance and defect / hazard records.

#### 7. Record of Review

Rev	Date	Revision description	By	Check	Approved
0	05.11.03	Draft	Cross-Section		
1	29.10.04	Issue – Rev 1	Cross-Section		
2	07.02.08	Rev 2	Cross-Section		
3	17.12.08	Rev 3 – Review required by Directive from Mines Inspector. Also separate the risk assessment from SOP and document in new format to meet Recognised Standard 02.	DS and Cross-Section	GB, MH, PT, KJ	KJ

title	date effective	revision status	set review	planned review	page
05 12 02 - Maintain and Water Mine Roads.doc	09.09.09	Rev 4	3 Yearly	09.09.12	5 of 6

Rev	Date	Revision description	By	Check	Approved
4	08.09.09	Rev4 – Review based on review of risks within new site Risk Register.	DS and cross-section	GB; MH; JR	JR

**RECORD OF REVIEW PARTICIPATION – 17<sup>th</sup> December 2008**

Name	Organisational Role	Process Role (Facilitator/Participant)	Process / Task Experience	Consensus (YES/NO)
Darryl Shaw	OHS Consultant	Facilitator	32 Yrs Mining – 9 Yrs OH&S – S1, S2, S3, G2, G3 – WH&SO – Cert IV Workplace Trainer / Assessor	YES
Pat Campbell	Supervisor / OCE	Participant	27 Yrs Mining – OCE - S1, S2, S3, G2 – Cert IV Workplace Trainer / Assessor	YES
Stuart Retschlag	Diesel Fitter	Participant	8 Yrs Earthmoving Experience – 20 Yrs Mining – Diesel and Heavy Earthmoving Equipment Fitter	YES
David Wood	Operator / SSHR	Participant	25 Yrs Mining – S1, S2, S3, G2 – Plant Operator - Cert IV Workplace Trainer / Assessor – Current SSHR	YES
Rob Graham	Operator	Participant	30 Yrs Mining / Earthworks – S1, S2, S3 – Plant Operator - Cert IV Workplace Trainer / Assessor	YES
Grant Thomlinson	Operator	Participant	23 Yrs Mining + 7 Yrs Civil Construction – Plant Operator - Cert IV Workplace Trainer / Assessor	YES

**RECORD OF REVIEW PARTICIPATION – 08<sup>th</sup> September 2009**

Name	Organisational Role	Process Role (Facilitator/Participant)	Process / Task Experience	Consensus (YES/NO)
Darryl Shaw	OHS Facilitator (Team Safe)	Facilitator	32 Yrs Mining – 9 Yrs OH&S – S1, S2, S3, G2, G3 – WH&SO – Cert IV Workplace Trainer / Assessor	YES
Sam Dierke	Operator (New Hope Coal)	Participant	5 Yrs Mining - Plant Operator (Dozers, Haul Trucks, Water Trucks, Excavators, Grader)	YES
Dave Wood	Operator (New Hope Coal)	Participant	23 Yrs Mining - S1, S2, S3, G2 - Cert IV Workplace Trainer / Assessor - Plant Operator (Dozers, Haul Trucks, Water Trucks, Excavators, Grader, Loader, Drill)	YES
Leon Richardson	OCE / Supervisor	Participant	20 Yrs Mining - S1, S2, S3, G2 - OCE - Shotfirer - Cert IV Workplace Trainer / Assessor	YES

title	date effective	revision status	set review	planned review	page
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