Environmental Management System

Rix's Creek North & Rix's Creek South

Rix's Creek Pty Ltd.

AIR QUALITY & GREENHOUSE GAS MANAGEMENT PLAN – Rix's Creek Mine

Updated Plan based on original report developed by Todoroski Air Sciences - February 2016 Report.

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Air Quality and Greenhouse Gas Management Plan
Rix's Creek North & Rix's Creek South
Rix's Creek Pty Limited

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1 INTRODUCTION

The Rix's Creek Mine (hereafter referred to as the Mine) is an open cut coal mine owned and operated by Bloomfield Collieries Pty Ltd (Bloomfield). The Mine comprises the original Rix's Creek Mine, now known as Rix's Creek South and the former Integra Open Cut Project Mine now known as Rix's Creek North.

This Air Quality and Greenhouse Gas Management Plan (AQ&GHGMP) forms part of a series of Environmental Management Plans for the mine and is the primary tool that will be utilised to manage air emissions from the operation and to minimise the potential for non-compliance at sensitive receptors[1].

1.1 Background

Approved operations within the Mine areas include:

- For the Rix's Creek South Mine: North Pit, Pit 2 and Pit 3 (also known as West Pit), rail loadout infrastructure (approved but not constructed) and CHPP; and,
- For the Rix's Creek North: the North Open Cut, South Pit, the Extended South Pit (Western Extension), CHPP and the rail loadout infrastructure.

Relevant infrastructure associated with the Mine includes open cut pits and mobile plant, CHPP, rail loading infrastructure, tailings dams and associated clean and dirty water storage facilities.

The Rix's Creek North includes the North Open Cut pit, which was previously subject to special management conditions including restricted operating hours. This pit will remain in care and maintenance mode for the foreseeable future, and is therefore omitted from this AQGHGMP.

The current Rix's Creek Mine consists of the original Rix's Creek Mine (Rix's Creek South - prior to the addition of the former Integra Open Cut) and the Rix's Creek North (former Integra Open Cut Mine). The entire site is known collectively as the Rix's Creek Mine; however, as the two previous mines operate under separate development approvals and licences, it is necessary to refer to the two parts of the Mine separately.

For the purpose of referring to the two previous mines in the AQ&GHGMP, the former Integra Open Cut Mine is referred to as Rix's Creek North and the original Rix's Creek Mine is referred to as Rix's Creek South.

[1] A sensitive receptor is a location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area. Consideration should also be given to the location of known or likely future sensitive receptors (source: NSW OEH (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*). All known sensitive receptor locations are identified by number in the latest environmental assessment for the project. Where possible, please refer to the receptor location number listed in the environmental assessment.

1.2 Local setting

The Mine is located in the Hunter Valley region of New South Wales (NSW), approximately 5 kilometres (km) northwest of Singleton and 3.5km southeast of Camberwell (see **Figure 1-1**).

The area surrounding the Rix's Creek Mine is typically comprises various open cut and underground coal mining operations, agricultural operations, industrial and commercial activities and a mix of rural residences and urban residential areas.

A number of sensitive receptors are located surrounding the Mine, as shown in **Figure 1-1**. The highest density of sensitive receptors is located to the southeast and an industrial precinct is located to the south of the mine. The sensitive receptors are more sparsely located in areas to the west, north and northeast.

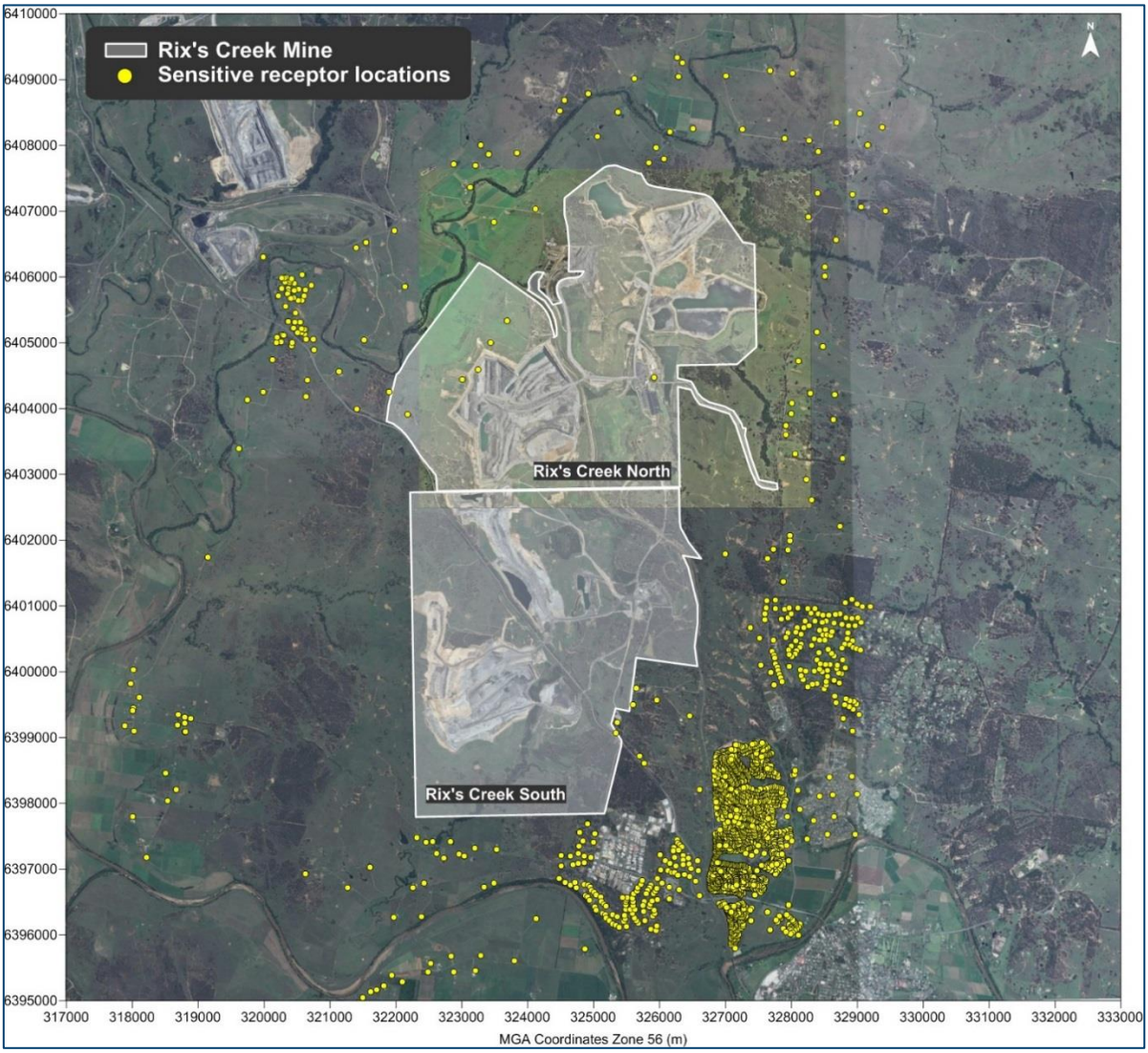


Figure 1-1: Rix's Creek Mine location

1.3 Structure of this Air Quality and Greenhouse Gas Management Plan

The remainder of the AQ&GHGMP is structured as follows:

Section 2: Outlines the statutory requirements applicable to the AQ&GHGMP.

Section 3: Outlines the dust generating activities relevant to Rix's Creek Mine operations.

Section 4: Outlines the relevant dust criteria applicable to Rix's Creek Mine operations.

Section 5: Provides baseline data.

Section 6: Outlines air quality and greenhouse gas management measures.

Section 7: Outlines the dust monitoring program components.

Section 8: Describes the management and reporting of incidents, complaints and non-compliances.

Section 9: Provides details for the review and improvement of the environmental performance process.

Section 10: Provides the references cited in the AQ&GHGMP.

2 STATUTORY REQUIREMENTS

This AQGHGMP has been developed to ensure compliance with the requirements of the Protection of the Environment Operations Act 1997 (NSW) (PoEO Act) and other relevant legislation.

Obligations relevant to Rix's Creek North and Rix's Creek South for this AQGHGMP are described below.

2.1 Rix's Creek North

The operations at Rix's Creek North are subject to the conditions contained in the Project Approval (PA 08_0102 MOD 8) dated 03 April 2019, which has been modified eight times.

The specific requirements for an AQGHGMP (Schedule 3, Condition 27), are as follows:

Condition	Section of the AQGGMP
27. The proponent must prepare an Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:	
(a) be prepared in consultation with EPA, and then submitted to the Secretary for approval;	✦ Draft AQGGMP supplied to EPA for review and feedback submitted prior to submission
(b) describe the measures that would be implemented to ensure:	
• compliance with the air quality criteria and operating conditions of this approval; and	✦ Section 6
• best practice air quality management is being employed;	✦ Section 6.1 & 6.2
(c) describe the air quality management system in detail;	Section 6
(d) include an air quality monitoring program that:	
• uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the project;	✦ Section 7.1 &7.2
• includes a protocol for determining any exceedances of the relevant conditions of this approval;	✦ Section 6.1
• adequately supports the proactive and reactive air quality management system;	✦ Section 6.1.2
• includes PM2.5 monitoring (although this obligation could be satisfied by the regional air quality monitoring network if sufficient justification is provided);	✦ Section 7.2

• evaluates and reports on the effectiveness of the air quality management system and the best practice air quality management measures; and	✦ Section 9
(e) include a protocol that has been prepared in consultation with the owners of nearby mines (including Integra Underground, Ashton, Rix's Creek and the Mount Owen Complex) to minimise the cumulative air quality impacts of the mines.	✦ Section 6.1.3
The Proponent must implement the approved management plan as approved from time to time by the Secretary."	✦ Section 9

2.2 Rix's Creek South

The operations in Rix's Creek South are subject to the conditions contained in the Development Consent DA 49/94 dated 19 October 1995, which has been modified ten times and was last modified on 12 June 2019.

The specific requirements for an AQ&GHGMP (Condition 14A), are as follows:

Condition	Section of the AQGGMP
The Applicant must prepare an Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:	
(i) be prepared in consultation with EPA, and then submitted to the Secretary for approval by 30 April 2017;	✦ Draft AQGGMP supplied to EPA for review and feedback submitted prior to submission ✦ Submitted prior to the 30th April 2017
(ii) describe the measures that would be implemented to ensure:	
• compliance with the air quality criteria and operating conditions of this approval; and	✦ Section 6
• best practice air quality management is being employed;	✦ Section 6.1 & 6.2
(iii) describe the air quality management system in detail;	✦ Section 6
(iv) include an air quality monitoring program that:	
	✦ Section 7.1 & 7.2

• *uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the project;*	
• *includes a protocol for determining any exceedances of the relevant conditions of this approval;*	✦ Section 6.1
• *adequately supports the proactive and reactive air quality management system;*	✦ Section 6.1.2
• *evaluates and reports on the effectiveness of the air quality management system and the best practice air quality management measures; and*	✦ Section 9
(v) include a protocol that has been prepared in consultation with the owners of nearby mines (including Integra Underground, Ashton, Rix's Creek North and the Mount Owen Complex) to minimise the cumulative air quality impacts of the mines.	✦ Section 6.1.3
The Applicant must implement the approved management plan as approved from time to time by the Secretary."	✦ Section 9

2.3 Environmental Protection Licences

All activities at the Mine will be conducted in accordance with the following relevant NSW Environment Protection Authority (EPA) Environmental Protection Licence (EPL): 3391

3 PARTICULATE MATTER

The substances considered in this plan are those identified in the Project Approval that have potential to affect the general health and amenity of the community and the surrounding environment. This includes particulate matter (dust), which refers to particles of varying size and composition that are defined in three classes.

- Total Suspended Particulate matter (TSP) which refers to the total dust particles that are suspended in the air and nominally defined with an upper size range of 30 micrometres (µm);
- PM_{10} which refers to particulate matter with an aerodynamic diameter less than 10µm; and,
- Deposited dust which relates to the largest dust particles in the air. These particles rarely travel far from the source as they rapidly settle under gravity.

3.1 Nature of particulate matter emissions

The main sources of particulate matter emission from the Mine arise due to general activities associated with the mining operations.

To understand how mining activities may affect air quality four factors should be considered:

- The generation of dust from mining activities;
- The dispersion in the air of the dust generated;
- How various size fractions of dust behave in the air; and,
- The prevailing background dust levels.

The generation of dust emissions from open cut mine activities can be considered in three distinct categories:

- Wind generated emissions, such as wind erosion of exposed surfaces, including stockpiles, overburden dumps and active pit areas, among others;
- Wind sensitive emissions, such as loading, dumping, emplacement, (essentially wherever material falls through the air); and
- Wind insensitive emissions, such as wheel generated dust from hauling, and dust from blasting and drilling (where the amount of dust does not predominantly depend on the wind speed at the time).

On windy days, particularly during prolonged dry periods, wind generated emissions and wind sensitive emissions will increase.

The prevailing atmospheric stability conditions affect the dispersion of generated dust emissions in the air. The degree of atmospheric dispersion has a large effect on the concentration of dust in the air at a distance away from the source.

The various size fractions of dust generated by mining activity will remain entrained in the air for different periods due to gravitational settling. The smaller dust fractions need lower wind speeds to settle than the larger fractions. It is important to note that the further the dust travels, the more dispersion will occur, and therefore, the lower the concentration will be.

The impact of mining dust is a function of the generation of emissions in the first place and also the effective dispersion of emissions in the air that arrives at the receptor.

Overall, there are two distinct weather conditions under which most short term dust impacts will occur:

- Hot, high wind conditions, especially where winds are relatively constant – under these conditions the quantity of dust from an operation can be high, leading to high impacts; and,
- Stable atmospheric conditions where there is little vertical mixing of the air, and hence relatively low dispersion of the dust leaving the site.

Background dust levels will naturally vary considerably in the wider area around a mine, and from day-to-day. The background levels at a monitoring site are affected by localised sources of dust including dirt roads, activities on, and wind erosion of, exposed or grazed agricultural land, burning, particles from urban areas, wood heating in winter and pollens. In addition, background levels will include effects due to regional events, such as extremely dry windy conditions, dust storms and bushfires.

Dust is of concern for nuisance and health reasons. Dust deposition on surfaces causes nuisance impacts, whereas existing evidence suggests that health effects from exposure to airborne particulate matter predominately arise from effects on the respiratory and cardiovascular systems. The potential health impacts are most closely associated with finer particles (PM_{10} and below).

3.2 Sources of particulate matter emissions

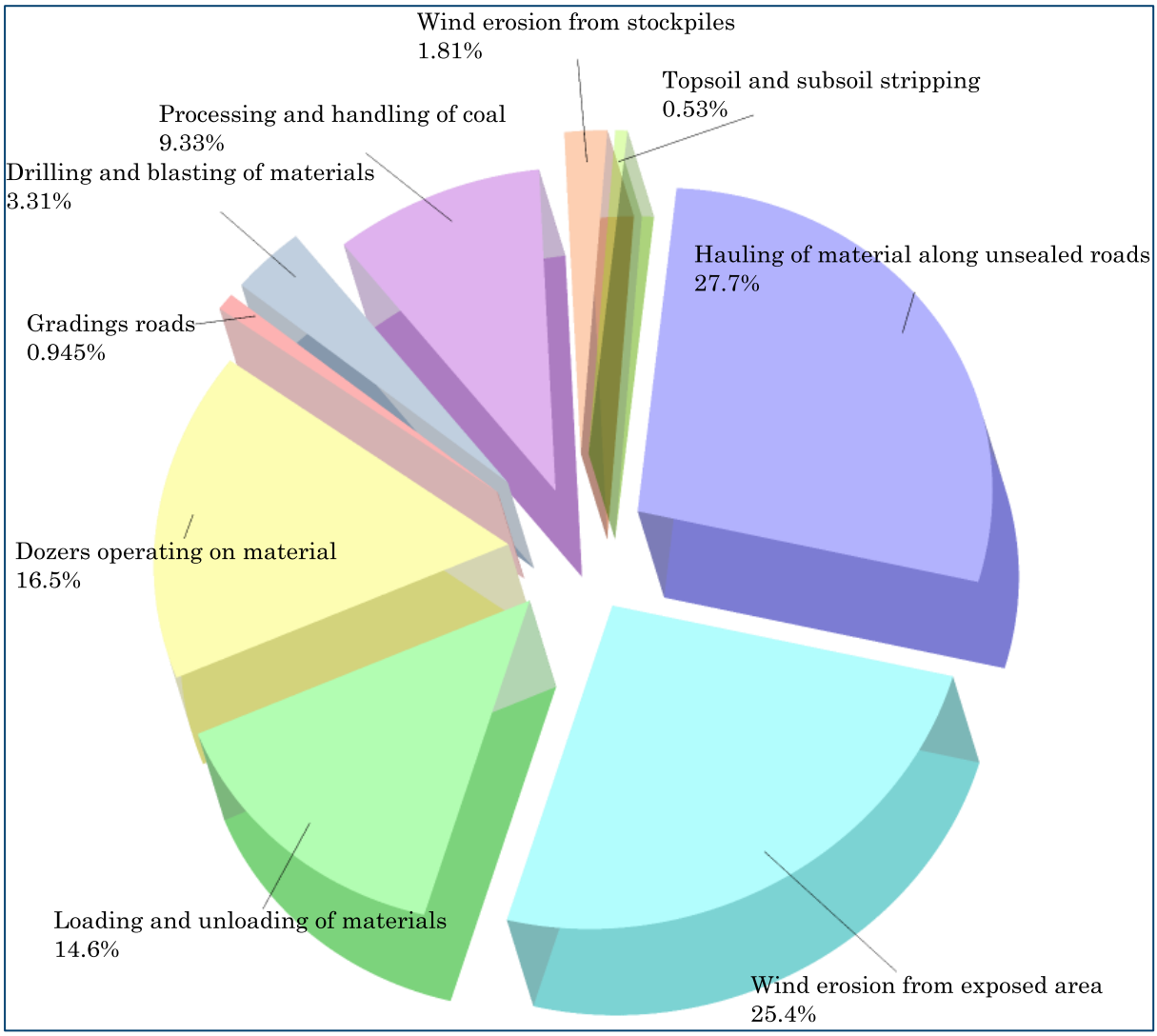
Significant particulate matter generating activities identified for the Mine comprise:

- Hauling of materials along unsealed roads;
- Loading and unloading of materials;
- Dozers operating on material;
- Wind erosion from exposed areas;
- Topsoil and subsoil stripping;

- Wind erosion from stockpiles;
- Drilling and blasting of materials;
- Grading roads; and,
- Processing and handling of coal.

Figure 3-1 presents a breakdown of the typical annual average source contributions based on emission inventories for Rix's Creek North (**Holmes Air Sciences, 2009**) and Rix's Creek South (**Todoroski Air Sciences, 2015**). The top four source contributors to particulate matter emissions are identified as hauling of material along unsealed roads, wind erosion from exposed areas, loading and unloading of material and dozers operating on material.

Note that sources of dust may be small on an annual average basis but still have high emission rates for short periods, for example dust from a blast event or topsoil stripping. Thus all sources of dust need to be carefully considered.



Source: **Holmes Air Sciences (2009)** & **Todoroski Air Sciences (2015)**

Figure 3-1: Typical emission source contribution

3.3 Cumulative air quality impacts

Other significant open cut mining operations in the area that may have an influence on cumulative air quality include:

- Mount Owen Complex;
- Ravensworth Complex;
- Hunter Valley Operations
- Wambo Coal Mine; and,

- Mount Thorley Warkworth Complex.

The location of these mining operations relative to the Mine is shown in **Figure 3-2**.

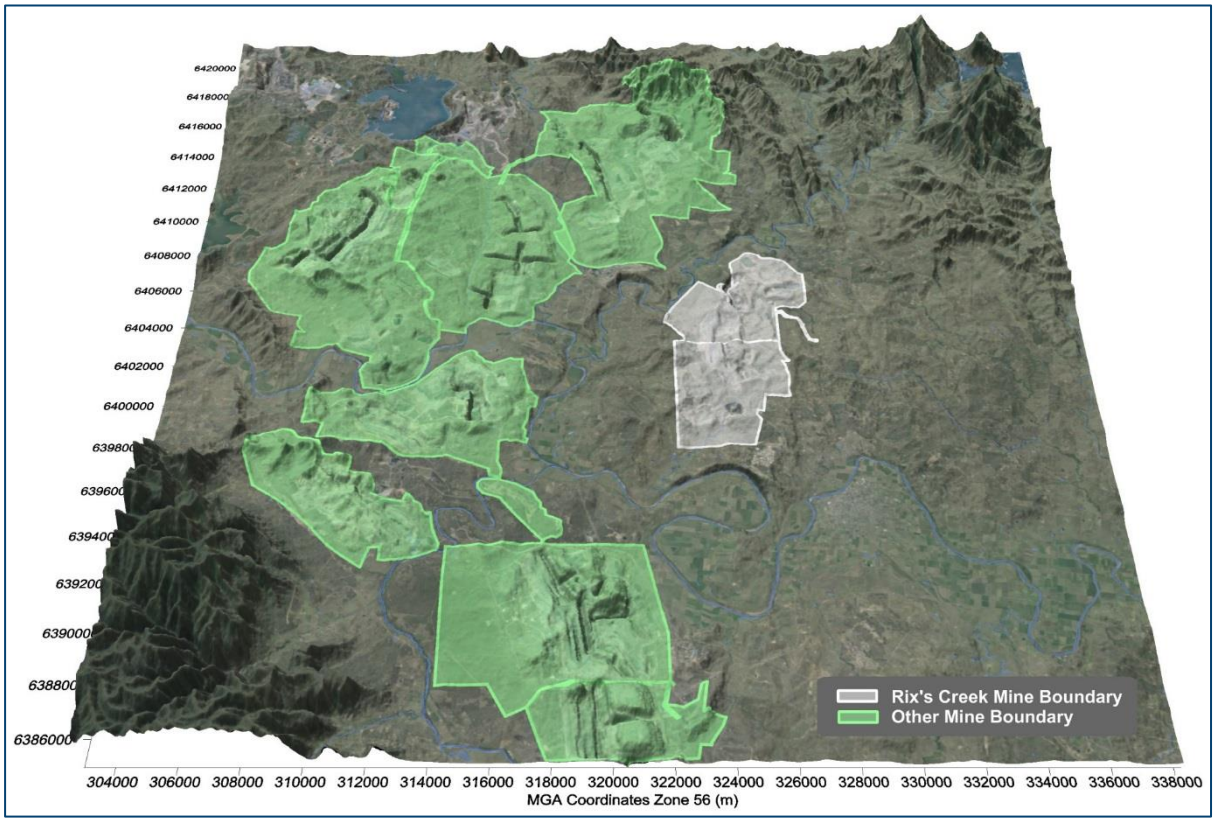


Figure 3-2: Other significant open mining operations

4 AIR QUALITY CRITERIA

The applicable air quality criteria for the Mine is summarised in **Table 4-1**.

The air quality criteria include impact assessment criteria, used for assessing compliance, and land acquisition criteria. An exceedance of the land acquisition criteria may trigger acquisition rights for the impacted property if an independent review finds that the Mine is primarily responsible for the exceedance.

Table 4-1: Summary of applicable air quality criteria

Pollutant	Averaging period	Impact assessment		Land acquisition	
		Criterion	Basis	Criterion	Basis
TSP	Annual	90 µg/m³	Cumulative	90 µg/m³	Cumulative
PM_{10}	Annual	30 µg/m³	Cumulative	30 µg/m³	Cumulative
PM_{10}	24-hour	50 µg/m³	Cumulative	150 µg/m³	Cumulative
PM_{10}	24-hour	-	-	50 µg/m³	Increment
Deposited dust	Annual	2 g/m²/month	Increment	2 g/m²/month	Increment
Deposited dust	Annual	4 g/m²/month	Cumulative	4 g/m²/month	Cumulative

Notes:

- Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to other sources);
- Increment impact (i.e. incremental increase in concentrations due to the project on its own);
- Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003 methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method; and
- Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity which has been endorsed by the EPA and then agreed to by the Secretary.

5 BASELINE AIR QUALITY DATA

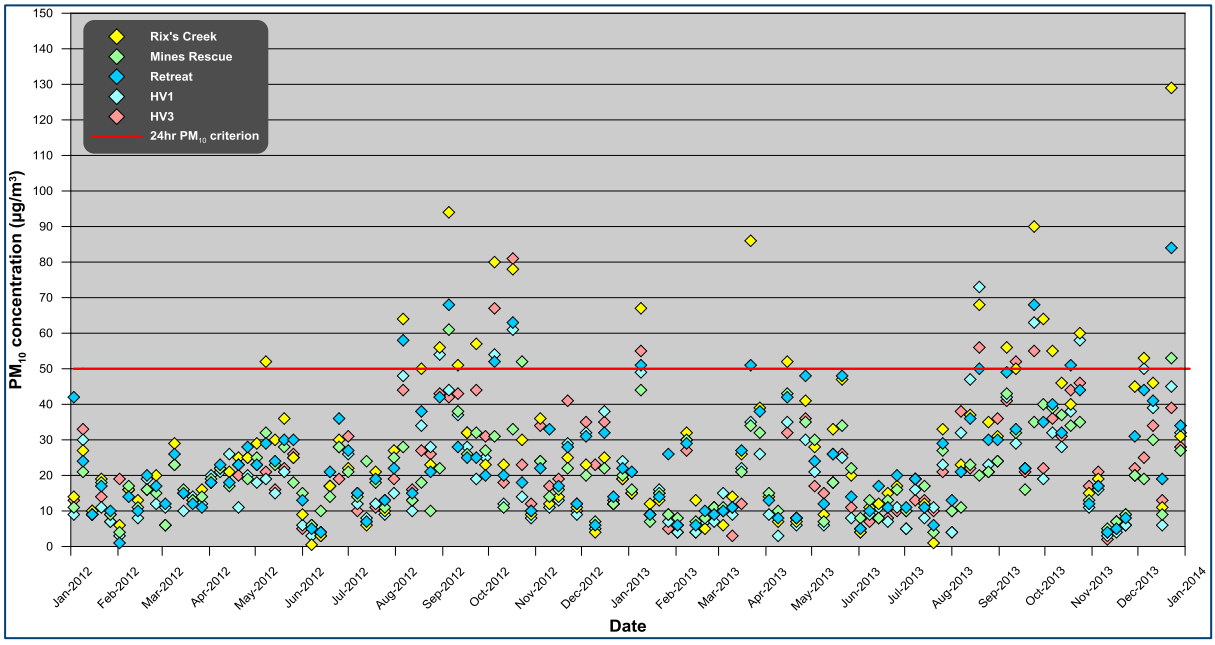
Baseline environmental air quality data collected at locations surrounding the Mine provide an indication of the air quality and meteorological conditions.

5.1 Dust monitoring data

Figure 5-1 and **Figure 5-2** present a graphical summary of the measured 24-hour average PM_{10} and TSP concentrations using High Volume Air Samplers (HVAS) during January 2012 to December 2014.

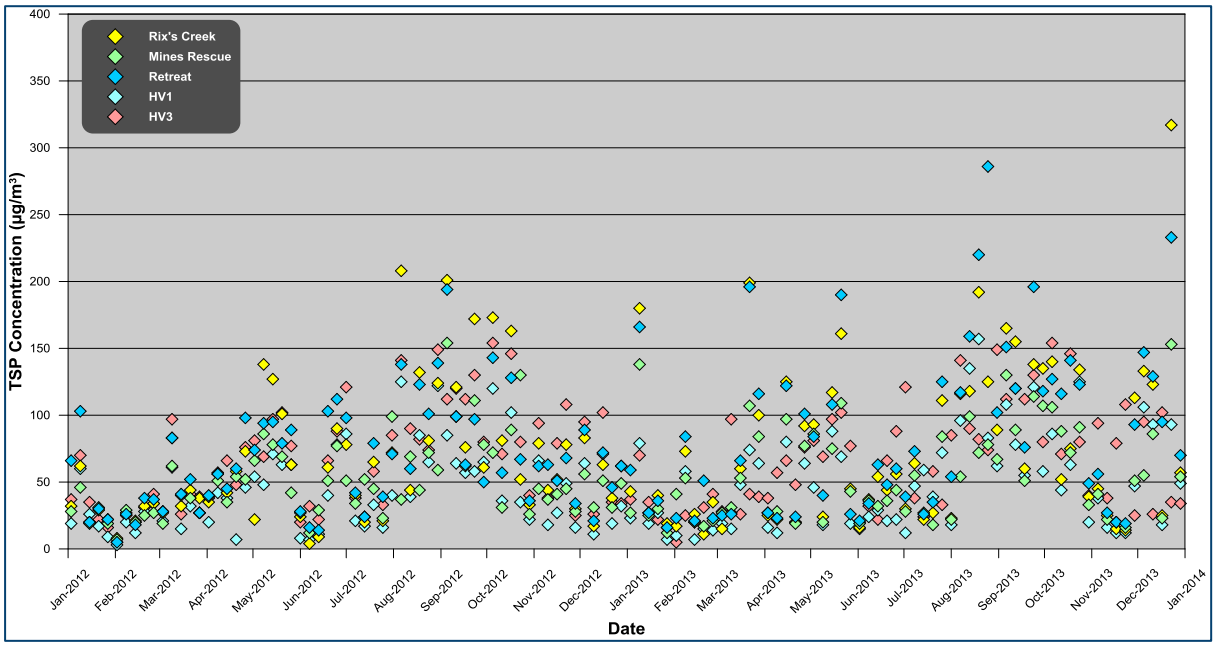
Seasonal trends are apparent in both figures which indicate levels are nominally highest in the spring and summer months with warmer weather raising the potential for drier ground and elevating the level of windblown dust, the occurrence of bushfires and pollen levels.

The data indicate that 24-hour average PM_{10} concentrations at times exceeded that relevant criterion of 50µg/m^3 at these monitors and can be typically attributed to regional events as indicated by levels at the other monitors.



Source: **Todoroski Air Sciences (2015)**

Figure 5-1: HVAS 24-hour average PM_{10} concentrations (µg/m^3)



Source: **Todoroski Air Sciences (2015)**

Figure 5-2: HVAS 24-hour average TSP concentrations (µg/m³)

A visualisation of the annual average dust deposition levels for 2012 is presented in **Figure 5-3**. The figure indicates that annual average dust deposition levels are generally contained to areas surrounding active mining and in areas to the west of the Mine.

The area to the west of the Mine would experience contributions from surrounding mining sources upwind and also other local sources such as traffic emissions and agricultural activities.

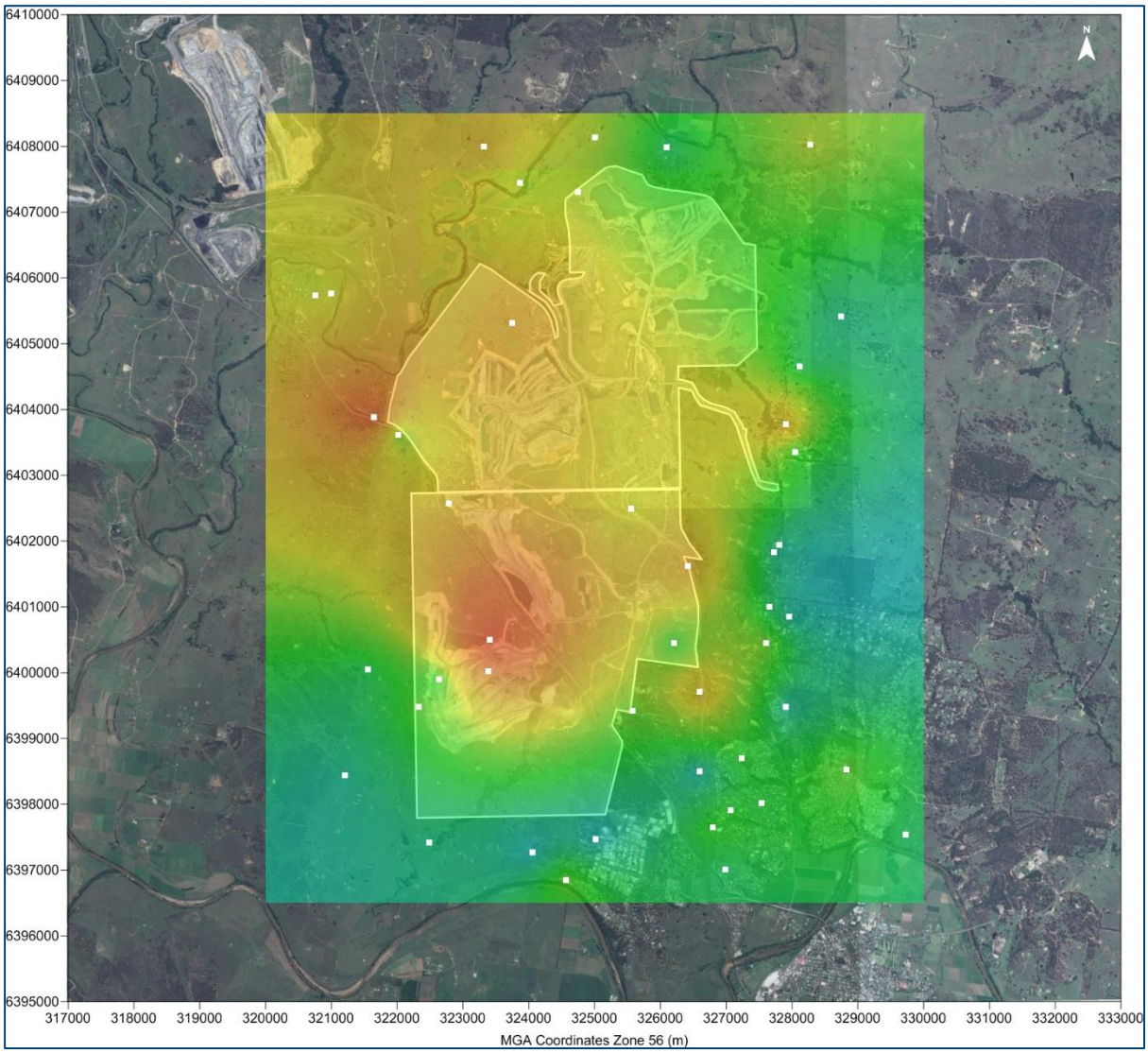


Figure 5-3: Visualisation of annual average dust deposition levels (2012)

5.2 Meteorological monitoring

Meteorological monitoring is undertaken at the Mine in accordance with EPL requirements. Annual and seasonal windroses prepared from data collected are presented in **Figure 5-4**. The windroses indicate typical wind patterns for the Hunter Valley with winds predominately along a northwest and southeast axis with few winds from the northeast and southwest quadrants.

Figure 5-4: Annual and seasonal windroses for Rix's Creek Mine (December 2014 – November 2015)

6 MANAGEMENT MEASURES

6.1 Air Quality

The air quality management measures described in this section are designed to minimise the impact on the surrounding environment due to on-site activities. The measures will be continually revised and updated as required based on operational changes and advancements in technologies.

6.1.1 Dust mitigation measures

The primary measures to control dust emissions for the Mine are set out in **Table 6-1**.

Table 6-1: Summary of dust mitigation measures

Activity	Dust mitigation measure
General	✦ Where applicable, make use of trees and shrubs as windbreaks around permanent areas that have potential for wind generated dust. ✦ Site induction is to include air quality requirements to ensure employee awareness of potential dust impacts, especially with respect to the Hunter area. ✦ Operate a proactive system to provide appropriate warning of adverse conditions when trigger levels may be exceeded. ✦ Follow the process for acting on the dust trigger action response plan.
Drilling & blasting	✦ Drill rigs will utilise dust suppression systems. ✦ Prevent disturbance of drill cuttings. ✦ Stem blast holes to prevent venting of explosion gases. ✦ Ceasing operations when visible dust generated during drilling. ✦ Conduct blasting during hours when dispersion is favourable, unless otherwise required for safety reasons. ✦ Review meteorological and blast forecast prior to blasting. ✦ Optimise blast design to minimise dust generation. ✦ Blasting operations undertaken in accordance with Blast Management Plan and Blast Fume Management Strategy.
Hauling on unsealed roads	✦ Watering of haul road surfaces at a rate of at least 1L/m²/h or the application of an equally effective dust suppressant. ✦ Prevent material being deposited / spilled on haul roads. ✦ Impose speed limits on all roads. ✦ Trafficable areas clearly marked, vehicle movements restricted to these areas. ✦ Trafficable areas and vehicle manoeuvring areas regularly maintained. ✦ Fleet optimisation to reduce vehicle kilometres travelled. ✦ Rehabilitate disused roads as soon as practicable.
Material extraction/unloading	✦ Preferentially undertake topsoil stripping when there is sufficient soil moisture to prevent or minimise significant dust lift-off. ✦ Application of water on areas where dusty prior to extraction. ✦ Sheltered dumping during periods of adverse weather. ✦ Where possible, minimise the fall distance of materials during loading and unloading. ✦ Minimise spillage from loading/ unloading and clean up any spillage as soon as practicable.

Activity	Dust mitigation measure
	✦ Relocate / reschedule operations during high dust periods, where practicable.
Dozer and grader operation	✦ Avoid use during unfavourable conditions. ✦ Minimise travel speed in dusty conditions. ✦ Travel on watered routes between work areas. ✦ Water haul roads immediately after grading, where possible.
Exposed areas	✦ Minimise advance clearing/ site preparation to reduce wind erosion. Only the minimum area necessary for mining will be disturbed. ✦ Design overburden placement to minimise the disturbance area. ✦ Rehabilitate overburden emplacement areas as soon as feasible. ✦ Apply interim stabilisation on areas inactive for long periods. ✦ Consider temporary rehabilitation or application of chemical controls to unused areas or dump slopes if there is a delay with rehabilitation or the area may be used again. ✦ Use cleared trees and branch material for stabilising rehabilitated landforms; this may include spreading of mulch branches on completed overburden landform. ✦ Regularly water cleared areas where appropriate.
CHPP	✦ Water spraying to minimise dust when unloading ROM to hopper; ✦ Slower tipping at ROM hopper during adverse weather conditions. ✦ Use visual triggers for implementation of further dust mitigation. ✦ Enclosed facility with internal water sprays at feeder, crusher, conveyor and transfer points as necessary. ✦ Enclosed conveyors and transfer points. ✦ Conveyors fitted with appropriate cleaning and collection devices. ✦ Regularly clean areas where spilt material can build up, e.g. under transfer chutes and conveyors.
ROM and product stockpiles	✦ Automated water sprays during high winds (>5.6m/s). ✦ Minimise drop heights when stacking. ✦ Manual implementation of water sprays and/or water cart during dusty periods. ✦ Visual surveillance of dust plumes during activity. ✦ Stockpiling and recovery on ROM coal is minimised as practical.
Rail operations	✦ Ensure streamlined and consistent profiled coal surface within rail wagons. ✦ Minimise spillage and parasitic loading. ✦ Clean and collect any spillage on a regular basis.
Adverse conditions	✦ Assess dust levels, weather conditions and operational activity to determine what mitigating action may be required. ✦ Immediate potential mitigating measures include: ○ Increasing water application and/or application of chemical suppressants to stockpiles; ○ Modification of mining operations; and/or ○ Suspension of mining operations; ○ Covering of exposed areas. ✦ Review available forecasts for: ○ Weather; ○ Dustiness;

Activity	Dust mitigation measure
	○ Potential dust impacts from Rix's Creek Mine; and ○ Potential dust impacts from nearby mines. ✦ Act upon any automated proactive system trigger, warning or alert per the procedure for any such system. These actions may include: ○ Ensuring availability of water cart fleet; ○ Scheduling of amended working hours during unfavourable dispersion conditions; ○ Temporary cessation of work within an area when identified to be a likely contributor to elevated dust measurements; ○ Temporary cessation of work when neighbouring operations are likely to emit high dust levels to prevent non-compliance of cumulative dust criteria; and ○ Coordinating with the neighbouring mines when it is likely that the Rix's Creek Mine will emit high dust levels or when adverse weather conditions are likely to occur to prevent non-compliance of cumulative dust criteria. ✦ Regularly review the measured data to determine if the Project's operations are in fact a significant contributor to dust concentration measurements and revise trigger levels, and any ensuing mitigating actions that are being taken.

A complete review of particulate emission controls at the Rix's Creek Mine against industry best practice will be performed on a three yearly basis and report the findings in the relevant Annual Review. The Mine will ensure that all reasonable and feasible avoidance and mitigation measures are employed.

6.1.2 Proactive and reactive management

The measures briefly described in **Table 6-1** under adverse conditions are largely aimed at preventing any potential exceedance of 24-hour average PM_{10} criteria and also to manage short-term visible or other such events. The Mine will operate measures to respond to changing dust conditions using real-time weather and dust monitoring data and a range of approved potential actions that can be taken at short notice.

6.1.2.1 Proactive measures

The proactive system is primarily based on forecast weather data and mine emissions information and would indicate the extent of dust emissions from the Mine at regular time steps into the future, e.g. hourly for one to two days into the future.

The proactive system would be primarily used as an alert of possible elevated dust levels due to the Mine, allowing time to prepare and better respond to any actual issue based on measured data.

6.1.2.2 Reactive measures

The real-time monitoring data will be used to identify when ambient levels of PM_{10} are elevated (and are potentially due to Rix's Creek Mine and require contingency action).

The following trigger levels have been developed to provide a guide for identifying periods in which to investigate the most significant contributor(s) to elevated dust levels.

- **Trigger Level 1 – Alert level** applies when the 10-minute average PM_{10} concentration is greater than 150µg/m^3, and/or 1-hour average PM_{10} concentration is greater than 50µg/m^3. Actions would include checking the forecast for that day, identifying risk areas and notifying operations managers to be on alert.

- **Trigger Level 2 – Remedial action level** applies when 1-hour concentrations are above 50µg/m^3 for three consecutive hours or more and the wind is blowing from the Rix's Creek Mine towards sensitive receivers. Actions would include increased watering, decreasing and / or relocating dust generating activities identified to be a source of impact on those areas at risk.

- **Trigger Level 3 – Extreme action level** applies when the rolling 24-hour concentration is above 50µg/m^3 for 6 consecutive hours or more or 1-hour concentrations are above 150µg/m^3 for three consecutive hours or more and the wind is blowing from the Rix's Creek Mine towards sensitive receivers. Actions include cessation of dust generating activity at all, or parts of, the Rix's Creek Mine when the elevated PM_{10} concentrations are not caused by an external regional pollution event such as bushfires, prescribed burning, dust storms or fire incidents. This situation is tested by examining the 24-hour PM_{10} concentrations at all of the Tapered Element Oscillating Mass balance (TEOM) instruments. If 24-hour PM_{10} levels are commensurately high at upwind TEOM sites, it can be assumed that regional PM_{10} is elevated and the Project site is not causing an exceedance. If not, appropriate action is needed.

The above trigger levels will be refined and modified on an ongoing basis as the actual performance is confirmed, operational experience increases and as the mine operations change over time. Consideration of the prevailing winds and dispersion conditions is paramount in this method of analysis and it is anticipated that as operator experience with the mine operations and surrounding influences develops, more appropriate trigger levels would be developed over time.

Reactive controls may include operational measures such as scheduling certain operations during favourable meteorological conditions or to alternative areas and could, in extreme cases, require all dust generating activities to cease operations. Appropriate actions should take into account the type of dust source (i.e. wind sensitive or wind insensitive) and the prevailing meteorological conditions in undertaking dust mitigating action.

Table 6-2 provides a summary of potential mitigation options applicable to the various trigger levels.

Table 6-2: Air quality management actions- PM_{10} trigger actions

Trigger level	Averaging period	Value	Condition	Action
1	10-minute	150µg/m3	10-minute average PM_{10} concentration is greater than 150µg/m³	This is a trigger to put the Environmental Officer on alert. Actions will include: ✦ Checking forecasts. ✦ Examining upwind / downwind dust levels. ✦ Notifying the Operations Manager to be on alert also.
	1-hour	50µg/m3	1-hour average PM_{10} concentration is greater than 50µg/m³	
2	1-hour	50µg/m3	1-hour average PM_{10} concentration is greater than 50µg/m³ for more than three consecutive hours AND When winds are blowing from the Project site in the general direction of the real-time dust monitor (representing a group of sensitive receptors), as recorded by the on-site weather station.	Increase dust control measures and/or modify activities. This would initially involve an assessment of weather conditions (i.e. strong winds or stable / calm) to identify most likely dust sources. Mitigation will include a combination of the following: ✦ Increase moisture content of haul roads, stockpiles and any other exposed areas. ✦ Implementation of water sprays at the site where loading / unloading of materials occurs. ✦ Relocation of activities.
3	Rolling 24-hour	50µg/m3	Rolling 24-hour concentration is above 50µg/m³ for six consecutive hours OR 1-hour concentrations are above 150µg/m³ for three consecutive hours AND When winds are blowing from the Project site in the general direction of the real-time dust monitor (representing a group of sensitive receptors), as recorded by the on-site weather station. AND Corresponding PM_{10} concentrations at upwind monitors are significantly lower.	Cease dust generating operations on-site or parts of the site as necessary to reduce dust levels.
	1-hour	100µg/m³		

6.1.3 Cooperation protocol

The management of cumulative impacts would require the Mine to establish communication and cooperate with adjacent mining operations. The Mine will inform adjacent mining operations when the

Mine's real time air quality monitors indicate excessive dust being generated at a particular site and will inform surrounding operators of the current measured air quality levels.

A protocol between the Mining companies has been developed where Nominated Environmental personnel from each mine meet quarterly to discuss the noise, blasting and air quality management at each site and methods to address cumulative impacts.

The protocol includes the following Mining Operations;

- Ashton Coal
- Mount Owen Complex
- Ravensworth Operations
- Integra Underground
- Rix's Creek Mine

6.2 Blast fume

The Mine utilises best practice blast management tools, including a blast overpressure dust and fume system based on forecast weather data to determine if the conditions for blasting are suitable. The Mine was the first coal mine in the Hunter Valley to adopt predictive management systems to manage its potential blast overpressure, dust and fume impacts, and its potential operational noise impacts. These systems have been in place for a number of years at the site and have been proven to significantly assist the blasting operations in averting potential blast impacts.

These blast management tools indicate the potential extent of any impact at various times during the upcoming day, and allow the operator to select the least impacting time of the day at which to schedule the blast. The actual conditions leading up to the proposed time of blasting are evaluated as part of the final considerations in making the decision to initiate a blast.

In the middle of the day, meteorological conditions are generally favourable for blasting. However, in the early evening, when the assessment indicates that there is potential for impacts to arise off-site, it is recommended that careful consideration of the potential for blast fume generation and the meteorological conditions at the time, be made to prevent any potential blast impacts at sensitive receptor locations.

The blast management system factors in the exact location of any blast and thus automatically adjusts in regard to the mine operation movement over time.

The Mine would continue to regularly review its blast management systems to ensure that best practice is being maintained. It would also coordinate with the blasting at nearby mines to minimise cumulative impacts of the mines from blasting.

All blasting operations are conducted in accordance with the Blast Management Plan (BMP). An integral component of the BMP is the Blast Fume Management Strategy which outlines the steps undertaken during every component of the blasting operation from the design stage right through to scheduling and initiation of the blast to reduce the potential for blast fume generation from blasts. Each blast is videoed and a ranking allocated for fume generation.

6.3 Odour

The spreading of bio-solid material is conducted to assist with the rehabilitation of the Mine. This activity can generate offensive odours which may impact the surrounding environment.

Measures will be put in place to ensure, as far as practicable, that no offensive odours, as defined under the PoEO Act, are emitted from the Mine.

Measures to manage odour from the spreading of bio-solid material include:

- The odour intensity of the bio-solids material received is rated on-site prior to any spreading activities. If the material is considered too odorous, the material is premixed with topsoil/overburden prior to spreading;
- Meteorological forecasts are analysed prior to bio-solid spreading activity with consideration of the location of nearby sensitive receptors. Spreading would only occur during favourable weather conditions, with winds tending to be generally from the majority of receptors towards the areas to be spread;
- Spreading generally occurs between the September to April period during favourable conditions with predominate winds from the southeast, away from the majority of residents.

6.4 Greenhouse gas

6.4.1 Preamble

The generation and emission of greenhouse gases (GHGs) as a result of anthropogenic activities contribute to climate change which can cause large scale environmental detriment. Global action is required to improve the understanding of the problem and provide solutions for both the adaptation and abatement of GHG emissions. It is important that the Rix's Creek Mine contributes to climate change solutions by minimising its GHG emissions.

6.4.2 Sources of GHG emissions

GHG emissions attributable to operations at the Rix's Creek Mine arise from the following sources:

Scope 1 Emissions:

- Fugitive emissions of carbon dioxide and methane released from coal seams when the coal is mined; and
- Combustion of diesel fuel, petrol and other hydrocarbons in the mine fleet, light vehicles and stationary diesel powered equipment and in explosives.

Scope 2 Emissions:

- Emissions at the power station from the generation of electricity purchased for use onsite.

Scope 3 Emissions:

- The transport of consumables to site, e.g. diesel and electricity;
- The transport of the product coal to the Port of Newcastle and the transport of the product coal overseas; and,
- The final use of the product coal, e.g. the combustion of the product coal in power generating facilities.

6.4.3 Greenhouse gas management

The Rix's Creek Mine will implement all reasonable and feasible measures to minimise the release of GHG emissions from the site. A summary of various mitigation and energy management measures to help reduce GHG emissions, are as follows:

- monitoring the fuel efficiency and regularly maintaining the diesel equipment;
- optimising conditions for fleet operations;
- monitoring the total site electricity consumption and investigate avenues to minimise the requirement;
- use of high efficiency electric motors;
- investigating efficiency of transformers;
- maximising production during off-peak hours and reducing during peak hours;
- conducting energy awareness programs for staff;
- minimising the production of waste generated on-site;
- efficient lighting systems with photo-sensors and timers; and
- a review of alternative renewable energy sources.

6.4.4 Greenhouse gas monitoring and reporting

The Rix's Creek Mine will monitor greenhouse gas emissions from the site in accordance with the requirements of the National Greenhouse and Energy Reporting Act 2007 (NGER, 2007) and the National Greenhouse and Energy Reporting Regulation 2008 (NGER, 2008).

7 AIR QUALITY MONITORING NETWORK

To assess compliance with the approval criteria performance indicators, and to meet the monitoring requirement of the EPL, ambient air quality monitoring will be conducted at various locations that are considered representative of residential receivers in the areas that may potentially be influenced by mining operations.

7.1 Monitoring methods

7.1.1 Dust deposition

Deposited dust is assessed as insoluble solids as defined by Standards Australia AS/NZS 3580.10.1:2003: Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric Method.

7.1.2 PM_{10} – Real-time monitoring

PM_{10} is indirectly measured using a Tapered Element Oscillating Mass Balance (TEOM). PM_{10} is assessed for the purpose of real-time environmental management as defined by Standards Australia AS/NZS 3580.9.8.2008: Methods for sampling and analysis of ambient air – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser.

7.1.3 $PM_{2.5}$ – Real-time monitoring

$PM_{2.5}$ is measured using an Beta Attenuation Monitor (BAM) and is assessed as defined by Standards Australia AS/NZS 3580.9.12:2013: Methods for sampling and analysis of ambient air – Method 9.12: Determination of suspended particulate matter – PM2.5 beta attenuation monitors.

7.1.4 Meteorological monitoring

Meteorological monitoring is conducted capable of continuously monitoring wind speed, wind direction, sigma-theta (the standard deviation of horizontal wind directions), temperature, rainfall, relative humidity, barometric pressure and solar radiation.

The meteorological station would be commensurate with the requirements as defined by Standards Australia AS 2923-1987: Guide for measurement of horizontal wind for air quality applications and United States Environmental Protection Agency publication EPA 454/R-99-005: Meteorological monitoring guidance for regulatory modelling applications.

7.2 Monitoring network

The network of ambient air quality monitors surrounding the mine operation and are positioned in areas representative of the surrounding sensitive receptor locations and background air quality levels. The ambient monitoring data provide insight into the potential dust contribution due to the operations.

The air quality monitoring network is shown in **Figure 7-1**. Further detail regarding the monitoring locations are presented in **Table 7-1**.

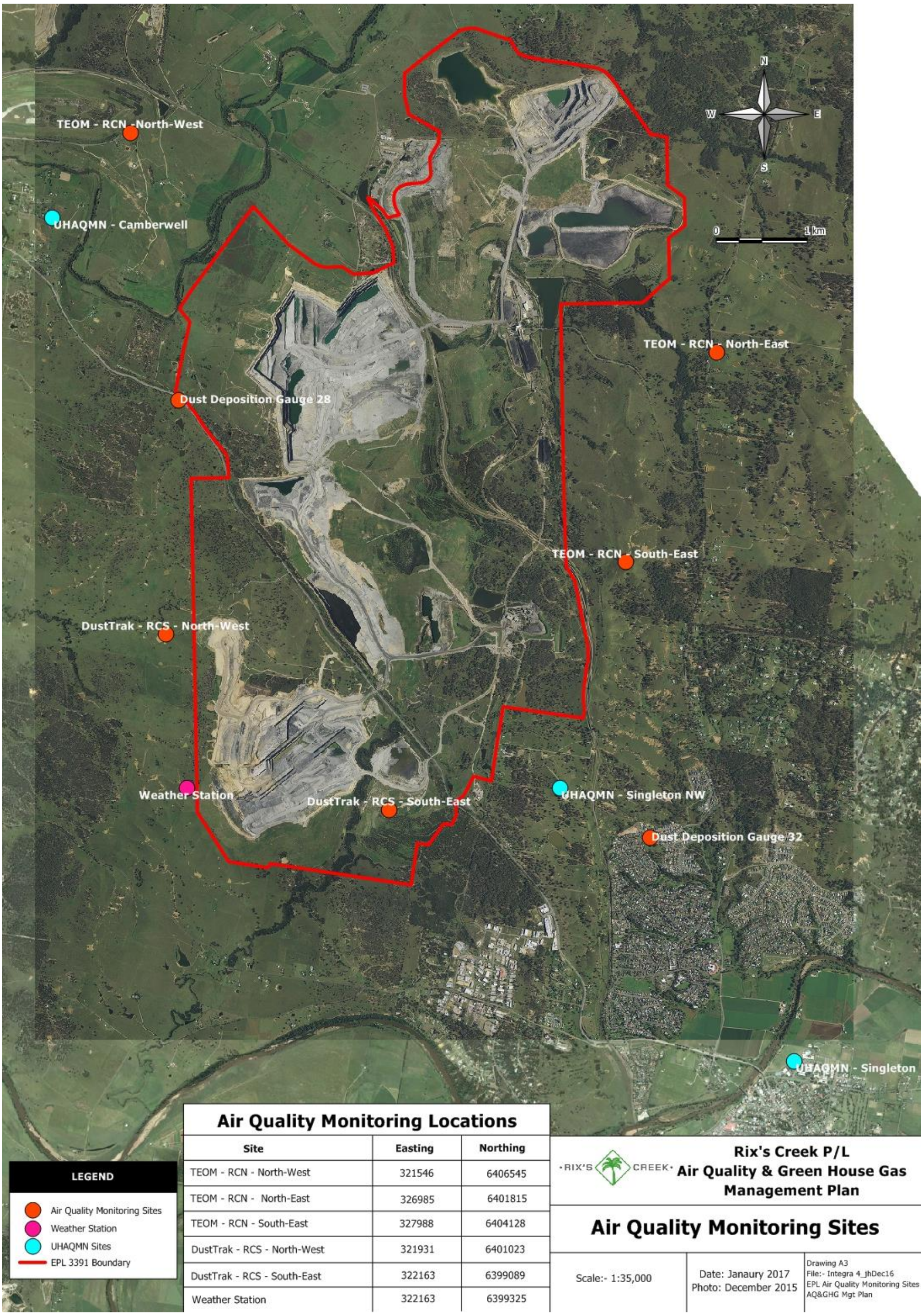


Figure 7-1: Dust monitors of Rix's Creek Mine

This network is augmented by ambient air quality monitoring stations operated by the NSW EPA. The NSW EPA monitoring site include monitoring of additional air pollutants and provide an extensive network of stations representative of the wider air shed.

Monitoring of $PM_{2.5}$ is conducted at the Camberwell and Singleton UHAQMN sites. These stations are located in close proximity to the Mine. The Camberwell site is located to the northwest and the Singleton NW and Singleton sites located to the southeast (refer to **Figure 7-1**).

The Camberwell and Singleton sites measure $PM_{2.5}$ as well as PM_{10}. The closest unit to the operation is the Singleton NW sites measuring PM_{10}. The prevailing winds as shown in **Figure 5-4** are predominately from the northwest during autumn/winter and southeast during spring/summer which indicate they are suitably located to measure any contribution from the Mine and can be used to further verify site monitoring results for PM_{10}.

For the sensitive receptors located between the Singleton UHAQMN site and the mine, $PM_{2.5}$ levels at the Singleton NW UHAQMN site can be inferred by assuming a similar $PM_{2.5}/PM_{10}$ ratio as measured at the Singleton UHAQMN site.

Rix's Creek Mine also operates several portable Intermediate Monitoring Units (IMUs) to provide notification of dust levels at locations near to the operations and between the operations and receivers. As the units are generally positioned close to mine activity, the recorded dust levels are more significantly influenced by the mine's activities, and provide a good indication of the dust levels emanating from the operations. When certain thresholds are reached, indicating excessive emissions, the mine is able to take immediate action to minimise the emissions before there is any significant effect at receptors.

Table 7-1: Summary of monitoring locations

Location		Site ID	Parameter	Frequency
Easting(m)	Northing(m)			
321546	6406545	TEOM – RCN – North West	Real time PM_{10}	Continuous
326985	6401815	TEOM – RCN – North East	Real time PM_{10}	Continuous
327988	6404128	TEOM – RCN – South East	Real time PM_{10}	Continuous
321931	6401023	DustTrak – RCS – North West	Real time PM_{10}	Continuous
324707	6402840	DustTrak – RCS – South East	Real time PM_{10}	Continuous
326265	6399322	UHAQMN – Singleton NW	Real time PM_{10}	Continuous
328840	6396313	UHAQMN – Singleton	Real time $PM_{2.5}$	Continuous
320681	6405600	UHAQMN – Camberwell	Real time PM_{10} & $PM_{2.5}$	Continuous
322054	6403608	DDG28 – NEH - NW	Dust deposition	Every 30 days ± 2 days
327235	6398704	DDG32 – Singleton Heights	Dust deposition	Every 30 days ± 2 days
322163	6399089	WSS	Meteorological parameters	Continuous
326674	6404262	WSN	Meteorological parameters	Continuous

7.3 Monitoring data validation

An assessment of the validation of monitoring data will be made on a monthly basis or in response to a measured exceedance of criteria (i.e. to confirm whether or not the exceedance is a non-compliance). This will be done per three escalating levels (Level 2 and 3 are applied as necessary):

Level 1: A first pass assessment that includes a check that all calibration and maintenance work due in that month has been completed, and an examination of the data. For example using a plot of the last month's data on a trend line spanning at least 12 months (where the data are available) or similar other simple and effective means to identify potentially erroneous or outlier data (e.g. wind roses for meteorological data), or tables showing variability and deviation from the average.

Level 2: Where data are assessed to be potentially invalid, a detailed examination of the available field records, laboratory notes, calibrations etc. shall be made. This may require a site inspection of the monitoring equipment, for example to check it is not damaged, dirty, corroded or compromised by insects, spider webs etc. Compare site data with data from the regional air quality – UHAQMN, records from the Camberwell, Singleton NW and Singleton units again to show variability and deviation from trends.

Level 3: Where anomalous or potentially invalid data are found and the issue is significant (e.g. may indicate an exceedance or equipment fault) and a level 1 or 2 evaluation cannot determine the cause, engage a professional air quality expert to examine the issue.

Monitoring records will be kept for at least five years after monitoring and will include the following information:

- The date and time of sampling;
- The sampling location; and,
- The name of the person collecting the sample.

8 COMPLIANCE PROTOCOL

8.1 Compliance evaluation

Compliance with the air quality criteria in **Section 4** requires a direct or indirect assessment of measured results.

The air quality monitors in conjunction with the regional air quality monitors operated by the NSW EPA are widely distributed so that when measured levels are below the air quality criteria, compliance is demonstrated.

However, measured levels above the criteria do not necessarily mean non-compliance. Dust-generating events not coming from the mine and resulting in non-compliance can usually be identified through

further assessment of the data in consideration of the meteorological conditions and the path of the wind from the source to the monitor.

In the case of measured levels above the criteria it may be that indirect methods are needed to ascertain whether compliance is achieved.

For 24-hour average PM_{10}, compliance can be inferred if measured dust levels at a site between a receptor and the mine are below the criteria.

It is permissible to exclude extraordinary events, such as "bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity which has been endorsed by the EPA and then agreed to by the Secretary".

To do this, generally requires that the mine-only incremental 24-hour average PM_{10} dust level to be established and for this level to be below the criteria to demonstrate compliance. This level may be inferred as the difference between the upwind and downwind measured 24-hour average PM_{10} levels, however, consideration of the following is required:

- The assessment requires steady prevailing winds which represent a constant direction;
- The path taken by the airborne particle matter when examining the origin of the dust arriving at a receptor. Be sure to consider the path over time and not just an average wind direction for an hour or day;
- A parcel of air can take significant time to travel across the site, pick up dust particles and arrive at a receptor. The time lag (between upwind events and when the upwind air arrives at a downwind receptor) will usually need to be considered in approximating mine-only incremental dust levels; and
- Dust levels downwind of a major dust source can have a narrow path under certain conditions, and measured levels at a location somewhat to the side of the downwind axis of the prevailing wind can be substantially lower than directly along the axis.

This method can also be used to infer compliance for 24-hr average $PM_{2.5}$ levels. Compliance with the 24-hr average $PM_{2.5}$ levels can be inferred if measured levels at the Camberwell and Singleton UHAQMN sites are below the criteria taking meteorological conditions into consideration.

TSP levels can be inferred from the measured PM_{10} data assuming that the TSP level is 2.5 times the measured PM_{10} level. This inference is derived from measurements in the **SPCC (1986)** study conducted for Hunter Valley mines. The approach is used at a number of mines in the Hunter Valley and allows the operation to focus on measurement of PM_{10} which is a better indicator of potential impact.

Additional assessment of air quality monitoring results will be undertaken by qualified air quality specialists if the following occurs:

- An exceedance against the impact assessment cannot be reasonably determined using the methods described above.

8.2 Reporting for compliance

When non-compliance with the air quality assessment criteria, the relevant regulatory authority will be notified. A report will be provided detailing:

- Date, time and nature of exceedance / incident;
- Cause (or likely cause) of the exceedance / incident;
- Descriptions of immediate actions taken; and
- Description of proposed measures to further address the exceedance / incident, if required.

8.3 Corrective actions

Where the compliance evaluation indicates non-compliance with the assessment criteria, the following actions will be undertaken:

- Identify activities occurring during non-compliance;
- Determine the most likely source of the emissions;
- Review the process and current dust controls; and
- Implement an alternative to reduce emissions where feasible;

The corrective action may involve supplementary monitoring to identify the source of the non-compliance, or may involve modification of activities to avoid any recurrence or minimise its adverse effects.

8.4 Complaints management

All complaints are to be considered. Any incident or complaint regarding to air quality will be recorded and investigated to identify wherever possible the specific cause and corrective action will be implemented where necessary and feasible to do so. The following would be conducted where required:

- Review of management practices to systematically identify and implement options to modify site practices, to ensure effective control of dust-generating activities so as to achieve compliance with the air quality criteria.
- All complaints will be documented by appropriate personnel on the complaints register with correction action taken.

The complaints register will document the following information of each complaint:

- Date and time of complaint was lodged;
- Method by which the complaint was made;
- Details of complainant (if provided);
- Nature of complaint;
- Action taken and reasoning behind action; (If no action was taken, the reasoning behind no action); and
- Follow up with the complainant.

The complainant will be advised of any actions implemented or proposed and their feedback sought in this regard.

The complaint record will be kept for at least four years after the complaint was made.

8.5 Roles and responsibilities

Air quality management roles and responsibilities are listed in **Table 8-1**.

Table 8-1: Roles and responsibilities

Role	Responsibility
Mine Manager	✦ Provide sufficient resources to manage air quality related risks and progress opportunities for improvement. ✦ Identify and allocate sufficient resources to manage air quality related risks by supporting AQ&GHGMP implementation.
Environmental Officer	✦ Oversee the implementation, monitoring and review of the AQ&GHGMP in accordance with applicable requirements. ✦ Record, investigate and respond to air quality related incidents and complaints in accordance with complaint and incident management procedures. ✦ Periodically assess dust management performance. ✦ Provide training to employees and contractors for the implementation of dust management related controls, systems and procedures. ✦ Implement, monitor and review programs, systems and procedures linked to the AQ&GHGMP. ✦ Monitor and review data collected as part of air quality monitoring network and assess compliance.

Role	Responsibility
Employees	✦ Conduct work activities in a manner that minimises dust emissions. ✦ Report excessive dust emissions to appropriate supervisor.

8.6 Key performance indicators

Table 8-2 details specific air quality management performance indicators for the Project.

Table 8-2: Specific performance indicators

Objective	Target	Performance indicator
Regulatory compliance.	No exceedances of air quality criteria given in **Section 4**.	Number of confirmed exceedances (excluding extraordinary events such as dust storms and bushfires).
	No offensive odours emitted from site.	Number of odour complaints.
Operating at optimum efficiency to minimise potential dust impacts from wind erosion.	Rehabilitation of final dump profile to occur within three months, or sooner.	Time between end of dumping/ shaping activity and rehabilitation.
	Disturbance area has been minimised.	Area of exposed land.
Perform as anticipated.	No increase beyond latest approved EIS prediction.	Long term trend in measured data, considering seasonal trends, new developments and excluding extraordinary events.
Ensure all applicable best practice measures are being taken to minimise dust.	Measures are comparable to established best practice (as applicable to the specific situation).	Maintaining on-site documentation or a log of dust mitigating measures taken, and the aspect of the operation to which they are applied.
	Newly developed, improved measures are adopted where applicable.	Development of new measures that are necessary to ensure optimal use of available resources.

8.7 Environmental air quality awareness and training

Rix's Creek Mine provides training commensurate with the roles and responsibilities of personnel outlined in **Table 8-1**.

Training implemented at Rix's Creek Mine with respect to air quality management includes the following:

- ✦ Site familiarisation inductions provided to all new employees and contractors;
- ✦ General environmental awareness provided to all employees and contractors; and
- ✦ Issue specific training sessions provided to employees and contractors as required.

9 REPORTING AND REVIEW

The performance of the AQ&GHGMP will be reviewed annually, along with the environmental performance of the Rix's Creek Mine. The review will include:

- A review of the monitoring results of the development over the preceding year;
- Identification of any failure to meet performance measures/criteria over the preceding year, and a description of what actions were (or are being) taken to ensure these are met; and,
- A description of what measures will be implemented over the coming year to improve the performance of the air quality management system.
- The review and results will be reported in the Annual Review submitted to:-
    - Regulators, Council, Community Consultative Committee and displayed on the web site (http://www.bloomcoll.com.au/).

The AQ&GHGMP will be reviewed within three months of the submission of the Annual Review and if necessary updated to the satisfaction of the Director-General. The AQ&GHGMP will also be reviewed within three months of the completion of an independent environmental audit, any exceedance of the Project Approval or other regulatory criteria or any modification to the conditions of the Project Approval, Development Consent or Environment Protection Licences.

Any major amendments to the AQ&GHGMP that affect its application will be undertaken in consultation with the appropriate regulatory authorities and stakeholders. Minor changes such as formatting edits may be made with version control.

The AQ&GHGMP may also be revised due to:

- Deficiencies being identified;
- Introduction of additional mitigation measures or controls;
- Results from the monitoring and review program, including exceedances of criteria;
- Recommendations resulting from the monitoring and review program;
- Changing environmental requirements;
- Improvements in knowledge or technology becoming available;
- Changes in legislation;
- Identification of a requirement to alter the AQ&GHGMP following a risk assessment; or
- Updating of the mine operating plan.

The Rix's Creek North will adhere to the additional procedures and environmental management, reporting and auditing requirements in accordance with Schedule 2 of Development Consent (File No. N90/00356) and Schedule 4 and 5 of PA 08_0102 MOD 6.

The Rix's Creek South will adhere to the additional procedures and environmental management, reporting and auditing requirements in accordance with Development Consent (File No. N90/00356) and DA 49/94 MOD 8 Condition 13 & 14.

Following monitoring results which indicate an exceedance of the relevant air quality criteria outlined in **Section 4**, Rix's Creek Mine shall notify the affected landowner and provide a copy of the NSW Health fact sheet entitled "Mine Dust and You".

If an affected landowner considers the Rix's Creek Mine is exceeding the relevant criteria in **Section 4**, they may request from the Director-General for an independent review of impacts that would include monitoring and identifying measures to be implemented to ensure compliance.

An annual review will be prepared at end of December each year to review the environmental performance of the operation and include a comprehensive review of air quality monitoring results, complaints records, identification of air quality trends, identification of discrepancies between the predicted and actual air quality impacts of the project and describe measures taken to improve environmental performance.

An Independent Environmental Audit will be conducted every three years and would provide an additional independent assessment of the adequacy of the AQ&GHGMP.

Air quality related reporting including monitoring results, plans and programs are to be provided on Rix's Creek Mine website in accordance with the requirements of the Project Approval.

10 REFERENCES

Environmental Protection Licence 3391

NSW EPA Environmental Protection Licence for Rix's Creek Pty Limited.

Holmes Air Sciences (2009)

"Air Quality Impact Assessment: Integra Open Cut Project", Prepared for URS Australia by Holmes Air Sciences, 19 June 2009.

PoEO (1997)

Protection of the Environment Operations Act 1997, New South Wales.

SPCC (1986)

"Particle size distributions in dust from open cut mines in the Hunter Valley", Report Number 10636-002-71, prepared for the State Pollution Control Commission of NSW by Dames & Moore, 41 McLaren Street, North Sydney, NSW, 2060.

Standards Australia / Standards New Zealand

"Australia / New Zealand Standard 3580.9.3:2003, Methods for sampling and analysis of ambient air; Method 9.3: Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High Volume sampler gravimetric method".

Standards Australia / Standards New Zealand

"Australia / New Zealand Standards 3580.9.6:2003, Methods for sampling and analysis of ambient air; Method 9.6: Determination of suspended particulate matter – PM10 high volume sampler with size selective inlet – Gravimetric method".

Standards Australia / Standards New Zealand

"Australia / New Zealand Standards 3580.10.1:2003, Methods for sampling and analysis of ambient air; Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric Method".

Standards Australia / Standards New Zealand

"Australia / New Zealand Standards 3580.9.8:2008: Methods for sampling and analysis of ambient air – PM10 continuous direct mass method using a tapered element oscillating microbalance analyser"

Todoroski Air Sciences (2015)

"Air Quality and Greenhouse Gas Assessment: Rix's Creek Continuation of Mining Project", 26 August 2015.

US EPA (2000)

"Meteorological Monitoring Guidance for Regulatory Modelling Applications", U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Air Quality planning and Standards. Research Triangle Park, NC 27711. EPA-454/R-99-005, February 2000.

Appendix A-

Evidence of consultation with agencies during the preparation of this plan

DOC17/178318-01, EF13/3519

Senior Environmental Officer
Rix's Creek Mine
PO Box 4
EAST MAITLAND NSW 2323

Attention: John Hindmarsh

Dear Mr Hindmarsh

RIXS CREEK COAL MINE - ENVIRONMENT PROTECTION LICENCE 3391
AIR QUALITY & GREENHOUSE GAS MANAGEMENT PLAN AND NOSIE MANAGEMENT PLAN

I refer to your email dated 21 March 2017 to the Environment Protection Authority ("EPA") and the documents titled *Air Quality & Greenhouse Gas Management Plan and Noise Management Plan.*

The EPA encourages the development of such plans to ensure that proponents have met their statutory obligations and designated environmental objectives. However, the EPA does not review these documents as our role is to set environmental objectives for environmental/conservation management, not to be directly involved in the development of strategies to achieve those objectives.

The EPA has not reviewed this report and accordingly offers no comment in relation to it.

If you wish to discuss the matter further please contact me on 02 4908 6833.

Yours sincerely

12.4.17

NATASHA RYAN
Regional Operations Unit - Hunter
Environment Protection Authority

PO Box 488G Newcastle NSW 2300
117 Bull Street, Newcastle West NSW 2302
Tel: (02) 4908 6800 Fax: (02) 4908 6810
ABN 43 692 285 758
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Appendix B-

Copy of Approval/s received from DPE

NSW GOVERNMENT | Planning & Environment

Planning Services
Resource Assessments
Contact: Megan Dawson
Phone: 9274 6391
Email: megan.dawson@planning.nsw.gov.au

Mr John Hindmarsh
Senior Environmental Officer
Rix's Creek Mine
PO Box 4
East Maitland NSW 2323

John

Dear Mr ~~Hindmarsh~~,

Rix's Creek (DA 49/94) and Rix's Creek North (MP 08_0102)
Approval of Combined Management Plans

I refer to your email dated 21 March 2017 seeking the Secretary's approval to combine the following management plans for Rix's Creek and Rix's Creek North coal mines:

- Air Quality & Greenhouse Gas Management Plan;
- Blast Management Plan;
- Noise Management Plan; and
- Environmental Management Strategy.

Considering the two sites are now operated by Bloomfield Collieries as an integrated complex, the Department accepts this approach. Under condition 18C of Schedule 2 of DA 49/94 and condition 4 of Schedule 5 of MP 08_0102, the Secretary agrees to your request to combine the above management plans/strategies.

If you wish to discuss this matter, please contact Megan Dawson on 9274 6391.

Yours sincerely,

Howard Reed

Howard Reed 28-3-17
Director Resource Assessments
as nominee of the Secretary

Planning and Assessment
Energy and Resource Assessments
Name: Bailey Williams
Phone: 8275 1306
Email: bailey.williams@planning.nsw.gov.au

Mr Chris Knight
Environment Manager
The Bloomfield Group

By email: cknight@bloomcoll.com.au

Dear Chris Knight

Rix's Creek Mine (DA 49/94 and MP 08_0102)
Review of Management Plans

I refer to your email dated 24 July 2019, seeking the Secretary's approval of three updated management plans for the Rix's Creek Mine (DA 49/94 and MP 08_0102), including the:

- Noise Management Plan (dated 24 July 2019) (condition 11 of Schedule 2 of DA 49/94 and condition 10 of Schedule 3 of MP 08_0102);
- Air Quality and Greenhouse Gas Management Plan (dated 24 July 2019) (condition 14A of Schedule 2 of DA 49/94 and condition 27 of Schedule 3 of MP 08_0102); and
- Blast Management Plan (dated 24 July 2019) (condition 12D of Schedule 2 of DA 49/94 and condition 19 of Schedule 3 of MP 08_0102).

The Department has reviewed these plans and considers that they address the relevant conditions of consent. As such, the Secretary has approved these plans. Please ensure that final untracked copies of these documents are provided to the Department by 8 August 2019 and are uploaded to the company's website.

Should you have any enquiries in relation to this matter, please contact Bailey Williams on the details listed above.

Yours sincerely

Howard Reed 31.7.19

Howard Reed
Director, Resource Assessments
as nominee of the Secretary