BLOOMFIELD COLLIERY

Annual Environmental Management Report

2013

Bloomfield Collieries Pty Ltd

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2013

Name of Mine	Bloomfield Colliery		
Titles/Mining Leases	Consolidated Coal Lease 761		
MOP Commencement Date	2012	MOP Completion Date	2016
AEMR Commencement Date	1/1/2013	AEMR End Date	31/12/2013
Name of leaseholder	Bloomfield Collieries Pty Limited		
Name of Mine Operator	Bloomfield Collieries Pty Limited		
Reporting Officer	Greg Lamb		
Title	Environmental Officer		
Signature			
Date			

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1 INTRODUCTION

Bloomfield Collieries (Bloomfield) is one of two open cut coal mines owned by its parent company, Big Ben Holdings Pty Limited (Big Ben). Bloomfield Colliery is located at East Maitland, NSW, and produces approximately 0.6 million tonnes of product coal by open cut methods per year. Coal has been mined on the property for over 100 years. Underground mining by the current owner commenced in 1937 and the last coal extracted from underground operations was in May 1992. The open cut commenced operations in 1964. Bloomfield produces mainly thermal coal with some semi soft coking coal, principally for the Asian export market.

The parent company also owns Rix's Creek Mine which is located north of Singleton. Rixs Creek currently produces approximately 1.4 million tonnes of product coal per year.

This report covers the calendar year 2013. Prior to the 2012 AEMR, reports had been based on Bloomfield's fiscal reporting year, which is April to March.

This report is prepared to meet the requirements for the production of Annual Environmental Management Reports (AEMR), as outlined by the NSW Department of Primary Industries - Mineral Resources (DPI-MR) in the Guidelines to the Mining, Rehabilitation and Environmental Management Reporting Process (edg03 V3, DPI-MR, 2006).

1.1 Consents, Leases and Licences

Bloomfield operates under consents, leases and licenses presented in Table 1.

Table 1: Approvals, Leases and Licenses for Bloomfield Colliery.

Approval/Lease/License	Issue Date	Expiry Date	Details/ Comments
Project Approval 07_0087	3 September 2009	31 December 2021	Granted by the Minister for Planning
Consolidated Coal Lease (CCL) 761	20 October 1991	8 October 2029	Granted by Minister for Natural Resources
Project Approval 05_0136 (Abel)	7 June 2007	31 December 2030	Granted by Minister for Planning
Environmental Protection License 396	31 December 2007	Renewed Annually	Issued by Department of Environment and Climate Change (now EOH)
Project Approval Modification, 07_0087_ Mod 1	16 May 2011	31 December 2021	Granted by Minister for Planning and Infrastructure
Project Approval Modification, 07_0087_ Mod 2	29 March 2012	31 December 2021	Granted by Minister for Planning and Infrastructure
Project Approval Modification, 07_0087_ Mod 3	20 February 2013	31 December 2021	Granted by Minister for Planning and Infrastructure

The lease area for CCL 761 is shown on the Bloomfield site locality plan in Plan 1.

Project Approval (05_0136) for the Abel Underground Mine allows for the operation of the Bloomfield Coal Handling and Preparation Plant (CHPP), Rail Loading Facility (RLF) and other related facilities required for the handling and processing of coal.

Project Approval (07_0087) was granted by the Minister for Planning under Part 3A of the *Environment Planning & Assessment Act 1979* (EP&A Act*)* to allow for the completion of open cut mining operations and rehabilitation. The approval was issued 3 September, 2009 and is subject to a number of conditions. A variation to modify the Project Approval under s75W of the EP&A Act was granted on 16 May 2011 (07_0087_Mod 1). An additional variation to modify the Project Approval under s75W of the EP&A Act was granted on 29 March 2012 (07_0087_Mod 2). A further variation to modify the Project Approval under s75W of the EP&A Act was granted on 20 February 2013 (07_0087_Mod 3).

A Mining Operations Plan (MOP) has been prepared under DREs new Interim MOP Guidelines. The new MOP has been accepted by DRE and covers the period 2012 – 2016.

1.2 Mine Contacts

The Bloomfield Colliery Mine Manager, Mr Brendon Clements, is the primary mining contact and is responsible for regulatory compliance. The Environmental Officer is Mr Greg Lamb who coordinates environmental management and rehabilitation operations at Bloomfield Colliery.

Postal Address	PO Box 4 East Maitland. NSW 2323	
Site Address	Four Mile Creek Rd Ashtonfield NSW 2323	Tel:02 4930 2600 Fax:02 4933 8940
Environmental / Community Hotline		24hr: 02 4930 2680
Mr Brendon Clements	Mine Manager	Tel: 02 4930 2641 Mob: 0437 684 222 Email: bclements@bloomcoll.com.au
Mr Greg Lamb	Environmental Officer	Tel: 02 4930 2689 Mob: 0457 819 211 Email: glamb@bloomcoll.com.au

1.3 Actions Required at Previous AEMR Review

Listed in Table 2 below are the actions required from the DRE review of the 2012 AEMR. The review of the AEMR was conducted on the 19th December 2013. Also listed are the relevant sections of the report that describe the measures taken in response to these actions.

Table 2: Action Required from AEMR 2012 Review

Action Required	Status	AEMR Section
Develop a weed management plan by 30/6/14	In progress	2014 AEMR
Bund all hydrocarbons not currently bunded by 28/2/14	Completed	N/A
Recover all fugitive hydrocarbons were practical by 28/2/14	Completed	N/A
Establish a dedicated contaminates soil land farming area by 30/6/14	In progress	2014 AEMR
Provide additional topsoil cover on sink hole by 30/6/14.	In progress	2014 AEMR
Prepare topsoil balance and report annually in AEMR	In progress	2014 AEMR

2 OPERATIONS DURING THE REPORTING PERIOD

2.1 Exploration

There were no exploration activities at Bloomfield during the reporting period.

2.2 Land Preparation

Approximately 1 ha of land was prepared for mining during the reporting period. This area was to the west of South Cut and Creek Cut. Vegetation (regrowth) and groundcover was removed with the topsoil. The topsoil was removed and placed directly on shaped overburden areas as part of the rehabilitation program. Topsoil volumes are presented in Table 3.

2.3 Construction

No major construction was undertaken on the site during the reporting period.

2.4 Mining

During the reporting period, Bloomfield operated 15 shifts a week for 48 weeks employing 93 personnel. Production was 1,015,000 tonnes of raw coal, 634,000 tonnes of saleable coal and 5.7 million cubic metres of overburden moved primarily using a Hitachi 5500 excavator and Caterpillar rear dump trucks.

Mining operations continued in S Cut and Creek Cut throughout the year, generally in accordance with the mining methods described in the 2012-2016 MOP. During the next reporting period, Mining in S Cut will continue towards the west and Creek Cut will continue towards the south and west.

2.5 Mineral Processing

The coal handling and preparation plant (CHPP) has a throughput of up to 8.5 Mtpa, as approved under the Abel Consent. The throughput is currently rated at 1000 tonnes per hour. ROM coal and clean coal volumes are presented in Table 3.

Table 3: Production and Waste Summary

	Cumulative Production (Annual Production)		
	Start of Reporting Period	**At end of Reporting Period**	**End of next reporting (estimated)**
Topsoil stripped (bcm)	263,000	303,000 (40,000)	343,000
Topsoil used (bcm)	263,000	303,000 (40,000)	343,000
Waste Rock (bcm)	53,579,000	59,309,000 (5,730,000)	64,809,000
Run Of Mine Coal (t) (Bloomfield)	9,116,000	10,131,000 (1,015,000)	11,131,000
(Donaldson)	18,206,000	18,794,000 (588,000)	18,794,000
(Tasman)	3,388,000	3,707,000 (319,000)	3,707,000
(Abel)	4,297,000	6,630,000 (2,333,000)	9,630,000
TOTAL ROM	35,007,000	39,262,000 (4,255,000)	43,262,000
Processing Waste (t) (Bloomfield)	4,439,000	4,832,000 (393,000)	5,232,000
(Donaldson)	5,613,000	5,827,000 (214,000)	5,827,000
(Tasman)	1,145,000	1,233,000 (88,000)	1,233,000
(Abel)	1,413,000	2,144,000 (731,000)	3,044,000
TOTAL WASTE	12,610,000	14,036,000 (1,425,000)	15,336,000
Coal (tonne) (Bloomfield)	5,335,000	5,969,000 (634,000)	6,569,000

2.6 Waste Management

Process Waste: Process Waste from the CHPP consists of breaker reject, coarse rejects and fine rejects (tailings). Breaker reject consists of large diameter (>150mm) rocks and coal rejects, and is hauled by truck to operational open cut pits and placed under advancing overburden dumps. Coarse rejects which are separated out during processing, and are currently disposed of under advancing overburden dumps. Fine tailings are currently pumped as 20% solids slurry to Tailings Dam, a disused open cut pit in north of the mine site. Reject fines settle out of the slurry, gradually backfilling the pit, whilst the decant water is returned to the CHPP for re-use in processing. Process waste volumes are provided in Table 3.

Waste Oil: Waste oil from scheduled maintenance of mining equipment and the workshop oil separator is collected in a storage tank and periodically evacuated for reprocessing and

re-use by a licensed waste oil contractor. The waste contractor re-synthesise the waste oil to a fuel oil product for re-use in ANFO explosive for blasting operations.

***Waste Oil Filters**:* During the reporting period a recycling bin was installed for disposal of used oil filters. Used oil filters are placed in a $3m^3$ bin and collected by licensed waste contractor for disposal.

Waste Metal: Bloomfield has a well implemented scrap metal recycling program, and has a high rate of on-site re-use of suitable steel. If no longer suitable for re-use, scrap metal is collected in designated skips and sold for recycling.

Waste Tyres: Discarded earthmoving machinery tyres are used on site wherever possible for the protection of the base of concrete plinths and metal columns located in areas where heavy vehicles are operated. As there is no recycling process available for heavy earthmoving machinery tyres, surplus tyres are disposed of progressively in the open cut void and buried. Tyres are disposed of as deep in the void as possible, without being placed on the pit floor, to avoid the potential of re-surfacing. The void is then progressively backfilled with overburden and rehabilitated in the normal process.

General Waste: General waste is placed in $1.5m^3$ and $3m^3$ bins and collected by licensed waste contractor for disposal.

Waste Paper: During the reporting period recycling bins were installed for disposal of paper and cardboard. Waste paper and cardboard waste is placed in $1.5m^3$ and $3.0m^3$ bins and collected by licensed waste contractor for disposal.

Paint Waste: During the reporting period a recycling bin was installed for disposal of paint drums. Used paint drums are placed in a $1.5m^3$ bin and collected by licensed waste contractor for disposal.

2.7 Product Stockpiles

The ROM stockpile pad has a capacity of 150,000 tonnes and the clean coal stockpiles have a capacity of approximately 500,000 tonnes.

2.8 Water Management

The water management system has been designed with three primary goals and objectives:

- separation of clean water and mine water;
- safe storage and priority use of mine water on-site;
- management of water that is discharged so as to preserve the environmental values of Four Mile Creek and comply with the conditions of EPL 396.

In meeting these objectives, the following components of the system have been constructed or implemented.

Mine Water: Bloomfield has two major mine water storage facilities, Lake Kennerson and Lake Foster. Water pumped from the open cuts (S Cut and Creek Cut) reports via open drains to Lake Kennerson. Run off from disturbed areas (i.e. high wall, haul roads,

overburden dumps awaiting rehabilitation) which has the potential to carry suspended solids, is also directed to Lake Kennerson. Lake Kennerson dissipates velocity and allows the settlement of suspended solids.

Lake Kennerson has a valve controlled pipe which, when opened, feeds to Lake Foster. Lake Foster also receives decant water from the tailings storage facility (U Cut) and water from the stockpile dam, which collects the run off from the CHPP and coal stockpile pads. Mine water is pumped, primarily from Lake Foster, to the CHPP for use in coal processing and for dust suppression spraying on the coal stockpile pads.

Mine water is discharged, via lockable valve pipes, into an open drain that flows to Four Mile Creek. Discharges are undertaken in accordance with conditions of the Environmental Protection Licence (EPL 396). Water samples are collected during discharge for independent water quality analysis. A monitoring station located downstream in Four Mile Creek continuously measures electrical conductivity (EC) and water level. Monthly background sampling is conducted in Lake Kennerson, Lake Foster and various upstream and downstream watercourses (see Section 3.3 for details).

During the reporting period, fine coal rejects (tailings) was transferred for disposal to a disused open cut pit (U Cut). Water from the historic underground workings is used in dust suppression and coal processing. Water storage volumes are presented in Table 4.

Clean Water: Run off from undisturbed and rehabilitated areas is directed away from operational areas and mine water storages via diversion banks and channels. These banks and channels direct this run off into clean water dams or natural watercourses. The major clean water storage dam is Possums Puddle. No clean water is accessed for operational purposes and these dams overflow into natural drainage systems. Further isolation of smaller rehabilitated catchment areas from the mine water system will continue as rehabilitation work progresses.

The major natural creek running through the site is Four Mile Creek. Most of the operational mining areas at Bloomfield are located within the catchment of Four Mile Creek. A series of drains and levees direct Four Mile Creek around Lake Foster (mine water storage) and into Possums Puddle (clean water storage). From Possums Puddle clean water overflows, or can be discharged, back into Four Mile Creek.

Table 4: Stored Water

	Volumes held (cubic metres)		
	Start of Reporting Period	**At end of Reporting Period**	**Storage Capacity**
Clean Water	90ML	90ML	90ML
Dirty Water			
Lake Kennerson	60ML	120ML	190ML
Lake Foster	20ML	20ML	45ML
Tailings Dam	400ML	400ML	600ML
S Cut	NIL (operational pit)	NIL (operational pit)	NIL (operational pit)
Creek Cut	NIL (operational pit)	NIL (operational pit)	NIL (operational pit)
Controlled Discharge Water (EPL 396)		1680 ML	
Contaminated Water	NIL	NIL	NIL

Rainfall for the period is shown in Table 5. The total rainfall for the twelve month period was 1147 mm compared with 915 mm for the previous year. This was 259mm above the annual average of 888 mm.

Table 5: Annual Rainfall

Month	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Total Rainfall	180	184	121	101	59	99	18	11	22	43	288	22	1147
Average Rainfall (1989 – 2013)	76	128	96	79	73	92	51	41	52	56	80	63	888

A comparison of monthly recorded rainfall for the reporting period and annual average data is shown in Figure 1.

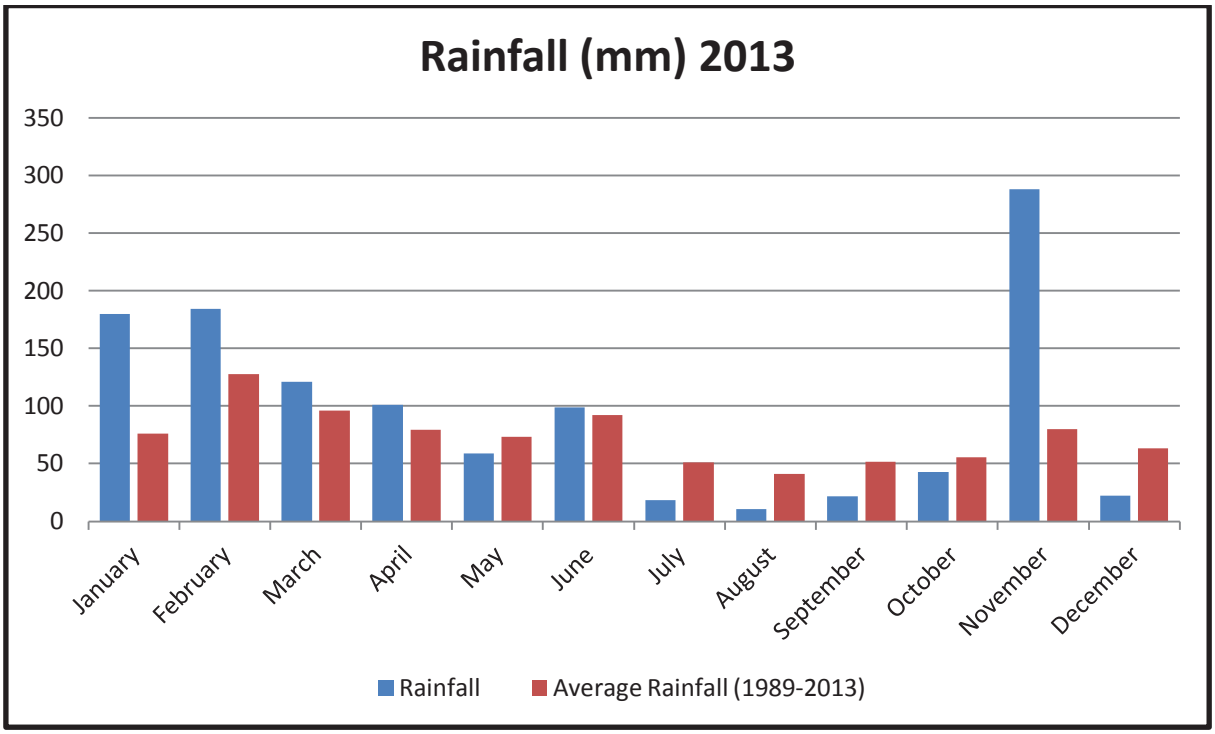


Figure 1: Rainfall

Waste water: Wastewater generated on site, consisting of domestic waste from bathhouses, administration offices and associated amenity areas, passes through a Cessnock City Council approved anaerobic waste water treatment system.

2.9 Hazardous Materials Management

Bloomfield held dangerous goods notification and a licence to store and handle explosives in accordance with WorkCover legislation for substances stored on site. The notification covers depots for explosives, distillate, gas cylinder stores, sodium hydroxide and MIBC reagent.

Explosives are stored in an explosive magazine located on site. The magazine complies with the relevant standards for storage of explosives. Bulk materials are also stored on site in a hopper for loading into a mobile mixing unit. This area is enclosed within concrete bunding and any spillage from this area is directed into a collection tank for periodic evacuation by a licensed contractor.

A bunded fuel farm, designed in accordance with AS1940, is used for bulk distillate storage at the open cut workshop. Spill protected racks are used for small volume oil and lubricant storage. Distillate, MIBC and sodium hydroxide used for coal processing in the CHPP are stored in tanks contained in bunded enclosures.

ChemAlert is an online Material Safety Data Sheet (MSDS) database service and is used to provide up to date MSDS information. If new chemicals are introduced to site they must comply with system requirements and be approved by the Mine Manager.

No hazardous materials-related environmental incidents were reported during the reporting period.

2.10 Other Infrastructure Management

Silt traps along the edges of haul roads and hard stand areas are cleaned at regular intervals. They have been designed to capture surface run off during rain events and allow sediment to settle. All silt traps, dams, drains, bunds, lines, valves and other infrastructure used to manage runoff are inspected on a quarterly basis as part of the site Environmental Management System (EMS). Issues identified during the inspections are reported and appropriate actions taken address these matters.

3 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

3.1 Air Pollution

3.1.1 Environmental Management

Dust can be generated by the operation of mobile plant on unsealed surfaces, loading and handling of coal and overburden in dry and windy conditions, or by blasting.

Operational procedures are in place to minimise dust impacts on the surrounding environment and community. Vehicular generated dust is controlled through the use of water carts on all internal roads and high traffic areas. The company provides a fleet of three water trucks to allow for greater coverage and flexibility in dry and/or windy conditions.

Sprinkler systems operate on coal stockpile areas and the surrounds of the washing plant. Conveyor systems at the washing plant and rail loader are enclosed on at least two sides. Operational practices such as not dumping to exposed locations, minimizing the drop height into trucks during loading are also employed.

The use of a predictive meteorological modeling software program is utilised to assist in planning mine operations. The software incorporates regional weather station data to predict daily weather events that may exacerbate dust impacts from operations.

A dust monitoring program is in place with 10 dust deposition gauges and 2 High Volume Air Samplers (HVOL) located on and around the mine lease area. The locations are listed in Table 6 and are shown in Plan 1. Samples are collected by independent environmental consultants and analysed by a NATA registered laboratory.

Table 6: Dust Monitoring Sites

Site	Location
On Lease	
D1	Adjacent to Buttai Reservoir
D2	Adjacent to Main Haul Road
D3	Communications Tower
D4	Adjacent John Renshaw Drive
D9	Shamrock Lane
Off Lease	
D5	Bali Close Ashtonfield
D6	Off Four Mile Creek Road
D7	Off New England Highway Avalon Estate
D8	Adjacent of Main North Rail line at Rail Loop
D10	Private property adjacent to John Renshaw Drive
HVOLs	Private property adjacent to John Renshaw Drive

3.1.2 Environmental Performance

Table 7 summarises the monthly deposition rates for insoluble solids during the reporting period and includes long-term averages for the site and the EPA guideline of 4 g/m^2/month.

Table 7: Annual Average Dust Deposition for Reporting Period

Insoluble Solids (g/m^2/month)										
Site	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**	**D8**	**D9**	**D10**
Jan-13	1.9	3.0	5.4c	1.1	1.4	3.0	2.0	2.4	6.1c	3.6
Feb-13	2.7	1.9	2.5	1.2	1.6	7.1c	1.9	1.4	1.0	1.1
Mar-13	2.0	1.2	1.2	1.6	0.4	2.1	2.3	1.6	0.8	1.1
Apr-13	1.0	1.3	1.3	1.5	1.2	3.7	1.0	1.5	1.2	1.4
May-13	1.8	0.9	2.6	1.2	0.9	2.4	0.8	1.5	0.9	0.7
Jun-13	1.5	1.1	1.8	0.7	2.1	5.1	1.1	1.3	0.7	0.5
Jul-13	1.7	1.0	1.5	0.6	1.3	8.5c	1.2	0.6	0.7	1.2
Aug-13	1.1	1.8	2.0	4.8c	1.8	1.7	4.5c	1.7	1.2	0.9
Sep-13	1.1	1.8	4.1	1.5	1.2	1.7	1.2	1.9	1.4	2.0
Oct-13	2.2	2.2	5.1	1.6	2.1	2.1	5.0	3.3	2.8	2.4
Nov-13	0.6	1.6	2.8	1.8	2.6	1.0	1.1	1.9	1.1	2.0
Dec-13	3.1	1.9	2.6	1.8	1.6	2.1	1.2	1.8	2.0	5.0c
Annual Averages										
1997-1998	1.2	1.8	1.8	1.5	1.1	1.9	1.6	1.5	1.8	1.7
1998-1999	1.5	2.1	1.8	1.6	1.3	2.4	1.6	1.1	1.8	0.9
1999-2000	1.8	2.6	1.8	1.1	1.5	1.9	2.0	1.3		
2000-2001	1.2	1.6	1.3	1.4	1.2	3.1	1.8	1.1		
2001-2002	1.1	1.8	1.4	6.6	1.3	2.0	2.4	1.3	1.4	1.7
2002-2003	1.7	2.0	1.2	4.3	1.9	2.3	1.9	1.8	1.4	2.2
2003-2004	2.4	1.6	0.8	6.5	1.2	1.5	1.4	1.3	1.0	1.0
2004-2005	1.6	1.5	1.1	3.2	1.1	2.2	1.4	1.4	0.9	1.1
2005-2006	3.4	1.9	1.2	3.1	1.0	1.4	1.5	1.4	1.2	1.9
2006-2007	2.8	2.2	1.5	3.9	3.0	1.7	1.8	1.7	1.2	1.8
2007-2008	2.7	1.9	1.6	5.2	2.1	2.0	1.9	2.2	1.2	2.3
2008-2009	1.8	1.9	3.3	6.0	1.3	1.7	2.0	1.9	1.5	2.9
2009-2010	1.8	2.4	3.2	3.1	1.4	1.6	2.3	1.8	1.5	2.8
2010-2011	1.1	1.6	1.8	1.6	0.9	2.4	1.4	1.4	1.1	2.1
2011-2012	1.6	1.5	1.3	3.4	1.5	3.8	1.2	3.2	1.0	1.9
2012	1.5	1.7	1.9	3.1	1.4	3.4	1.8	1.6	1.1	2.2
2013	1.7	1.6	2.5	1.3	1.5	2.5	1.7	1.7	1.3	1.5
Overall	1.8	1.8	1.7	3.1	1.4	2.2	1.7	1.6	1.2	1.9
EPA Licence Limit	**4**									

Notes: ** - Overall annual average since 1997.*

C - "Denotes highest result contaminated with insects, vegetation or bird droppings and considered non standard

All dust deposition gauges recorded annual averages below the 4g/m^2/month limit for 2013. The long term average annual dust deposition rates are all within the nominated criteria. Sites D2 and D3 are located adjacent to operational areas well within lease boundaries. Results from these sites indicate the level of dust generated by mining operations and are unlikely to impact off site. Site D4 was repositioned in December 2012 to the southern mining lease boundary, adjacent to John Renshaw Drive.

Table 8 summarises the PM10 and TSP monitoring results during the reporting period and detailed results are provided in Appendix A. All PM10 results recorded 24-hour averages below the 50 ug/m3 limit for 2013. The highest result recorded was 46 ug/m^3. The annual average PM10 result recorded was below the 30 ug/m^3 limit for 2013. The average annual PM10 level was 17 ug/m^3. The annual average TSP result recorded was below the 90 ug/m^3 limit for 2013. The average annual TSP level was 38 ug/m^3.

Table 8: Dust Monitoring Sites

	PM10 24hr (ug/m^3)	**TSP (ug/m^3)**
Maximum 24hr Average result 2013	46	-
EPA Licence Limit PM10 24hr Average	***50***	***-***
Annual Average 2013	17	38
EPA Licence Limit Annual Average	***30***	***90***

3.1.3 Reportable Incidents

No reportable incidents relating to air pollution occurred within the reporting period.

3.1.4 Further Improvements

The air quality monitoring program will be continued in accordance with Air Quality Monitoring Plan requirements.

3.2 Erosion and Sediment

3.2.1 Environmental Management

Erosion and sedimentation control is an integral part of the site's water management system. The design of rehabilitated areas incorporates water management structures to effectively shed run-off water, whilst minimising erosion and sediment load. Progressive rehabilitation of disturbed areas as soon as is practicable also reduces the potential for erosion and downstream sedimentation.

There are a number of sediment basins around the site that are positioned to intercept run-off from other disturbed areas on-site, such as along haul roads, stockpile pads, infrastructure areas, and recently rehabilitated areas. These structures are inspected as part of the site EMS and cleaned as necessary.

Site drains used to transport mine water, or natural catchment flow, are inspected for erosion or damage as part of the site EMS, and remedial maintenance works conducted as necessary.

3.2.2 Environmental Performance

No major erosion or problems with erosion and sediment control were observed during the reporting period. Rehabilitated areas are regularly inspected in addition to quarterly inspections of erosion and sediment controls across the site.

3.2.3 Environmental Incidents

No reportable incidents relating to erosion and sediment occurred during the reporting period.

3.2.4 Further Improvements

An erosion and sediment control plan has been prepared in accordance with the conditions of the Project Approval. As mining and rehabilitation progresses the recommendations will be followed including ongoing quarterly inspections of erosion and sediment control structures.

Two small isolated bare patches within rehabilitated areas have been identified and will be ripped, retreated with biosolids and fertiliser and re-seeded during the next reporting period. The combined total area will be approximately 0.5 Ha.

3.3 Surface Water

3.3.1 Environmental Management

Bloomfield Colliery has prepared and submitted a Water Management Plan (WMP) in accordance with Development Consent requirements for the operation of the mine. The Plans prescribe the process water source and supply requirements, site-water balance, storage, impact management and monitoring of surface water in the vicinity of the mining operations.

Bloomfield has several sources of surface water (mine water) that require management to avoid pollution, or a non-compliance with the site EPL.

In addition to the physical, or infrastructure, components of the mine water management system (as detailed in Section 2.8), the two major management controls for surface water pollution are *water quality monitoring* and *licenced mine water discharge*.

Water Quality Monitoring: The water monitoring program at Bloomfield consists of discharge sampling, which is under *licensed mine water discharge*, and background monitoring. The background monitoring sites are centred on Four Mile Creek and its tributaries. Progressing down the catchment, the four Mile Creek sites are:

- John Renshaw Drive (W10);
- Four Mile Creek upstream of Lake Foster (W6);
- Possums Puddle Overflow (W4);
- Ewells Creek and Four Mile Creek junction (W3);
- Shamrock Creek and Four Mile Creek junction (W12); and
- Four Mile Creek at New England Highway (W11).

Background monitoring samples are also collected from tributaries of Four Mile Creek at:

- Shamrock Creek (W2); and
- Ewells Creek (W5).

The three on-site water storage dams are sampled, namely:

- Lake Kennerson – mine water (W9);
- Lake Foster - mine water(W8); and
- Possums Puddle – surface water (W7).

One monitoring site (W1) is located adjacent to the old Rathluba Colliery site in the west of the mine lease area, on a tributary of Wallis Creek. And a further monitoring site (W13) is located on Buttai Creek on Buchanan Rd.

Plan 2 shows the location of monitoring sites. These sites are sampled monthly and analysed at an independent laboratory for the following analytes:

- pH;
- Electrical Conductivity (EC);
- Dissolved Oxygen;
- Turbidity;
- Total Suspended Solids (TSS);
- Total Dissolved Solids (TDS); and

- Filterable Iron.

Quarterly analysis includes:

- Chloride;
- Sulphate;
- Alkalinity (HCO3);
- Alkalinity (CO3);
- Calcium;
- Magnesium;
- Sodium; and
- Potassium.

These results are reviewed and, if required, remedial action or further investigation initiated to identify the cause of anomalies.

Mine Water Discharge: Mine water is discharged in accordance with conditions P1, L3 and L4 of Environmental Protection Licence 0396 (EPL). These conditions allow discharge of 40ML of mine water per day, within water quality limits, dependent on rainfall. Representative samples are collected at the discharge point and at the Four Mile Creek monitoring station during each day of discharge. Samples are tested on site to ensure discharge water is within the allowed water quality limits, before being dispatched to an independent laboratory for analysis. Discharge samples are tested for:

- pH;
- EC;
- Total Suspended Solids (TSS);
- Total Dissolved Solids (TDS); and
- Filterable Iron (for discharge point samples).

A permanent monitoring station is located on Four Mile Creek, approximately 500m upstream of the New England Highway. It records EC and water level (via pressure sensor and V-notch weir) every 15 minutes and logs the results every hour.

Other Management: All infrastructure (i.e. drains, dams, spillways, discharge pipes and valves) used for the separation of clean water and mine water, or the discharge of mine water, are inspected as part of the site EMS, with a documented quarterly check sheet being completed.

3.3.2 Environmental Performance

Background Monitoring Results: The background water monitoring results are shown in Figures 2 to 6 below.

Figure 2 and 3 shows EC and pH results for the Four Mile Creek sites. Figure 2 shows salinity levels are slightly elevated in the lower end the catchment. Four Mile Creek is ephemeral and the EC level varies with rainfall and mine discharge. The higher salinity results along Four Mile Creek (Ewells Creek and Shamrock Creek junctions and New England Hwy) reflect concentration of solutes in ponds during low flow periods and from licensed discharges in addition to offsite sources such historic underground workings.

As outlined later, there were 21 licensed discharges throughout the reporting period. The monthly sample collected in February, April, September and November coincided with a licensed discharge event.

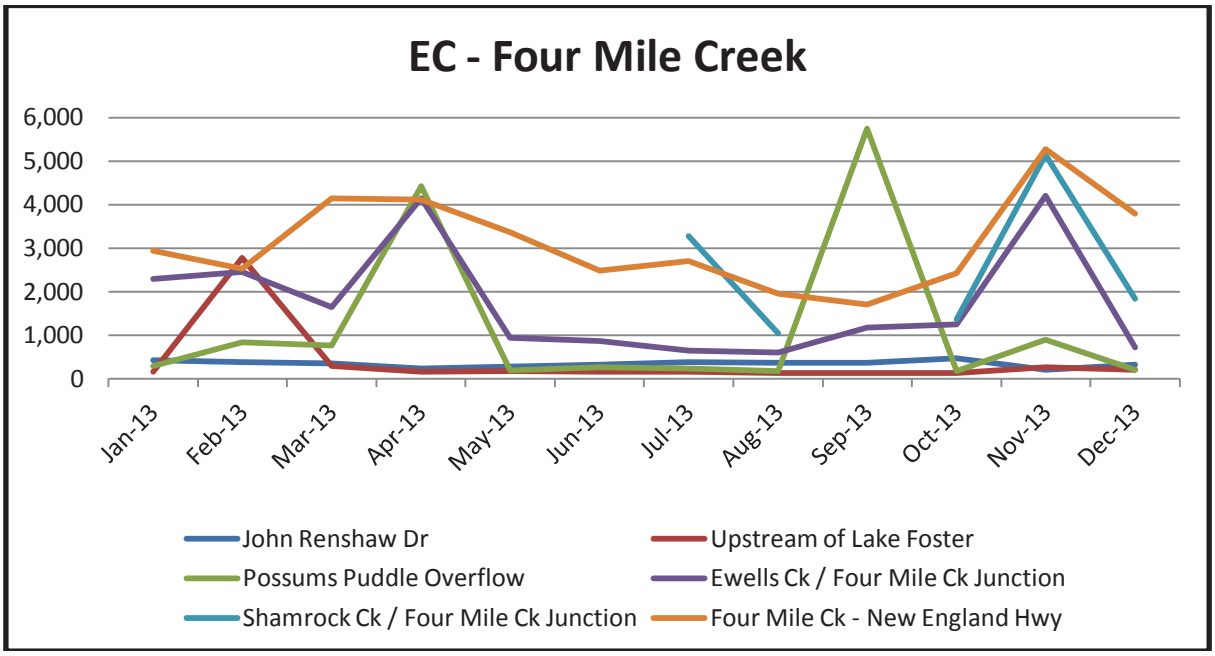


Figure 2: Four Mile Creek Catchment Electrical Conductivity

Figure 3 shows the pH levels in Four Mile Creek are generally consistent with ANZECC water quality guidelines (pH 6.5-8.5).

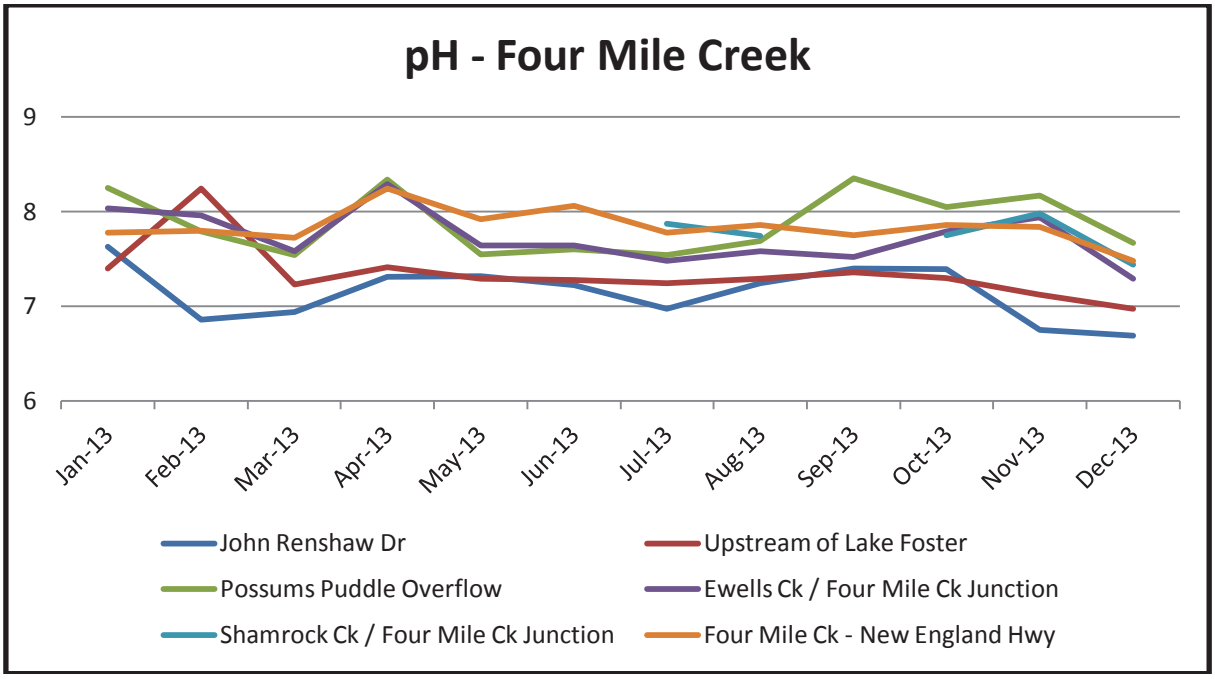


Figure 3: pH of Four Mile Creek

Figure 4 shows EC and pH results for water storage dams. Water quality within the mine water storage dams (Lake Kennerson and Lake Foster) varies throughout the year depending on rainfall capture in the open cut pits, CHPP water usage and frequency of licensed discharge events, which are also rainfall dependent. The freshwater dam (Possums Puddle) remains fairly constant throughout the year as it is separate from mining influences.

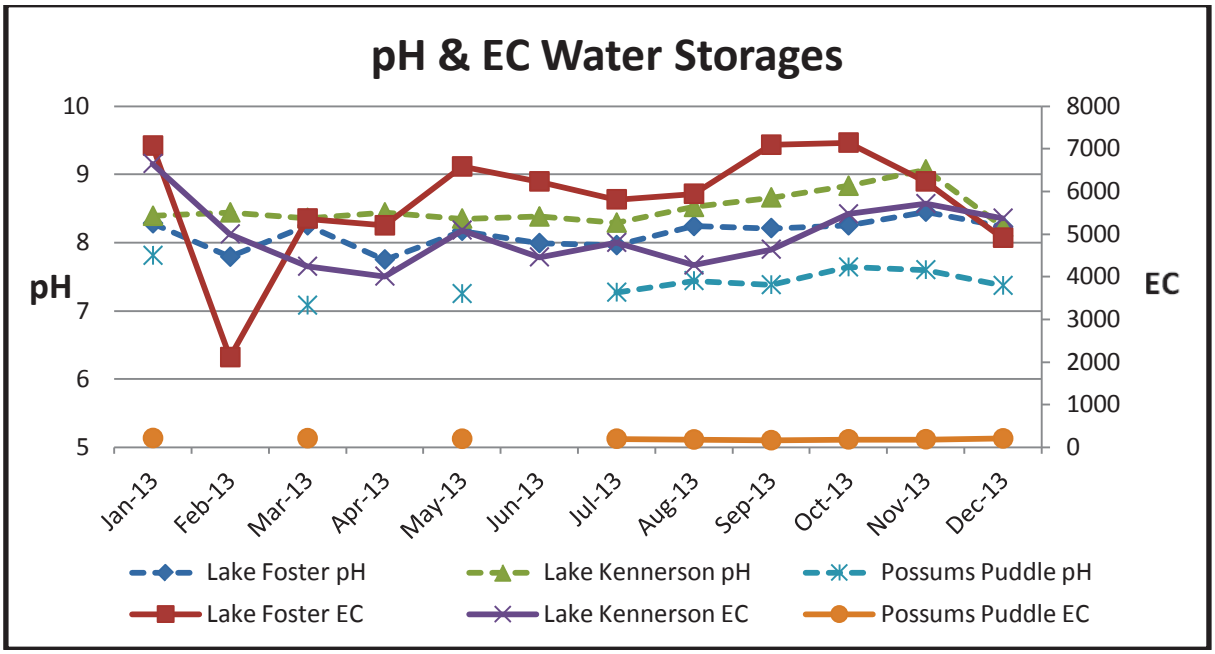


Figure 4: pH & EC in Site Water Storages

Figure 5 shows the pH and salinity levels in Four Mile Creek tributaries are generally consistent with ANZECC water quality guidelines (pH 6.5-8.5 & EC 125-2200).

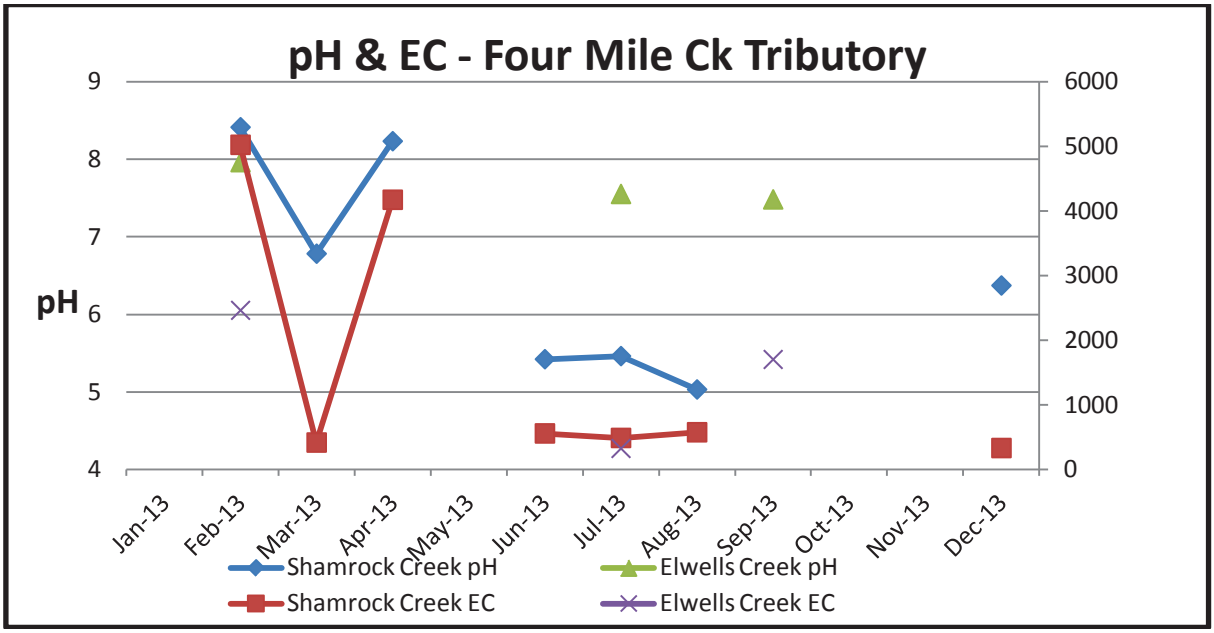


Figure 5: pH & EC in Four Mile Ck Tributory

Figure 6 shows the pH and salinity levels in Wallis Creek tributaries are generally consistent with ANZECC water quality guidelines (pH 6.5-8.5 & EC 125-2200).

Previous results indicate that the surface flow adjacent to Rathluba has historically been of low pH, regardless of mining impacts. Prior to 2006 pH results were less than 4 however pH levels have been steadily increasing since then. This drainage line carries surface flow from non-mining land and rehabilitated mining land, indicating that other off-site effects may be influencing the water quality in the area.

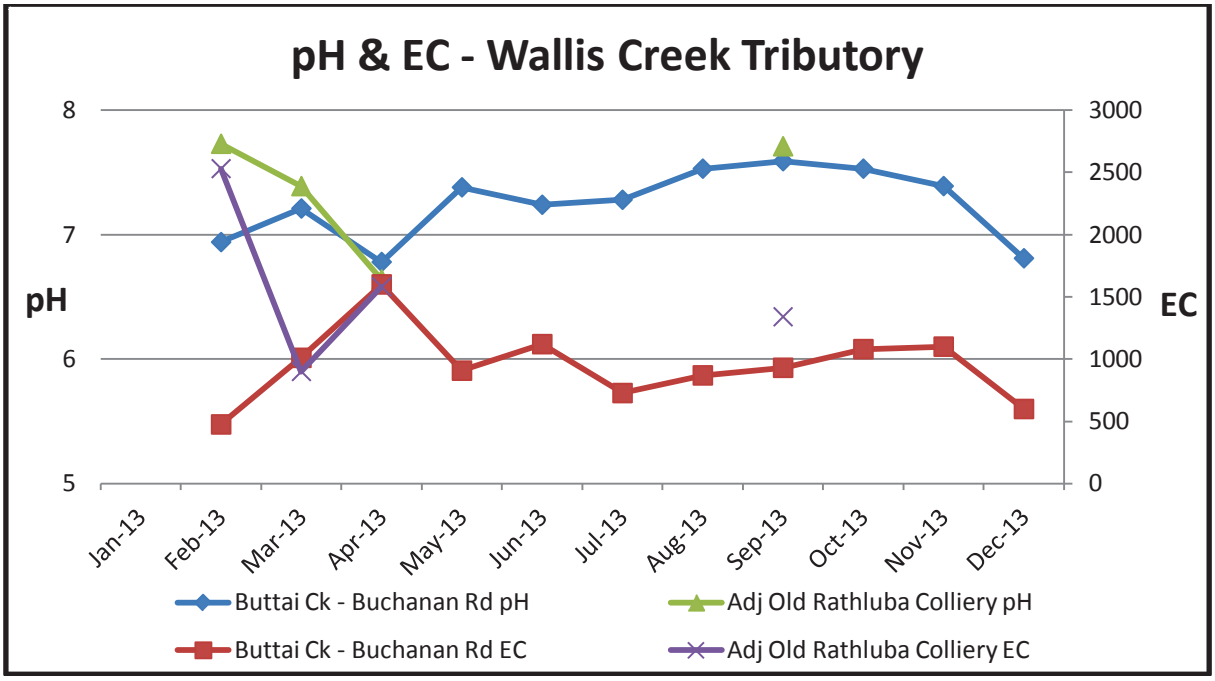


Figure 6: pH & EC in Wallis Ck Tributary

Discharge Monitoring Results: there were 21 licensed discharges conducted during the reporting period, with a total discharge volume of 1680 ML. Table 9 shows the average, maximum and minimum water quality results at the discharge point, compared to EPA discharge water quality thresholds. Detailed daily discharge results are provided in Appendix B.

Table 9: Discharge Sampling Analytical Results

DATE	pH	TOTAL SUSPENDED SOLIDS (mg/L)	TOTAL DISSOLVED SOLIDS (mg/L)	CONDUCTIVITY (uS/cm)	IRON (mg/L)	DISCHARGE VOLUME (ML/day)
EPA Limits	**6.5-8.5**	**30**	**-**	**6,000**	**1**	**40**
Average	8.2	9	3,506	4,493	<0.05	39
Maximum	8.4	27	4,950	5,710	<0.05	40
Minimum	7.7	1	1,360	2,040	<0.05	20

3.3.3 Environmental Incidents

There were no reportable surface water incidents during the reporting period.

3.3.4 Further Improvements

The surface water monitoring program will be continued in accordance with WMP requirements.

3.4 Ground Water

3.4.1 Environmental Management

Bloomfield Colliery has prepared and submitted a Water Management Plan (WMP) in accordance with Development Consent requirements for the operation of the mine. The Plans prescribe the process water source and supply requirements, site-water balance, storage, impact management and monitoring of groundwater in the vicinity of the mining operations.

3.4.2 Environmental Performance

Quarterly monitoring was undertaken during the period and the results are summarised in Figures 7 - 9. The results are fairly consistent and do not show any real trends. At this stage insufficient data has been collected to provide an analysis of any long term trends in the groundwater quality over time. Bore PD7.1 shows a rise in EC in the last sample collected in 2013. The S Cut high wall has quickly moved west and is now within a few metres of Bore PD7.1. This may have some bearing on EC levels.

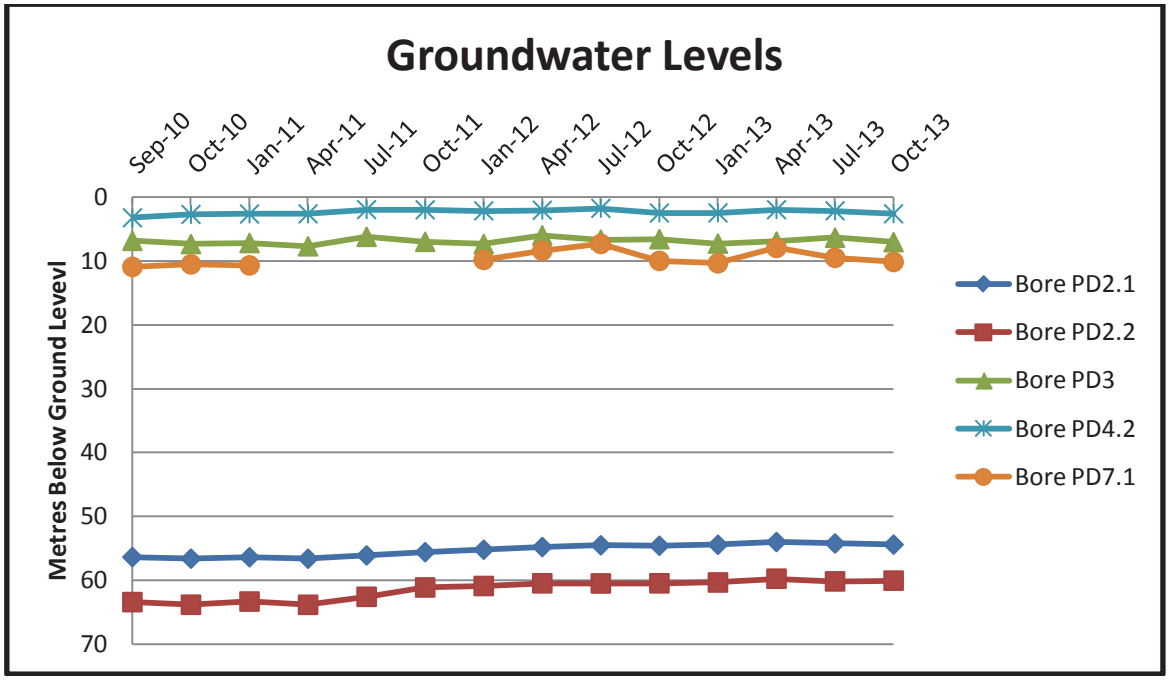


Figure 7: Groundwater Levels

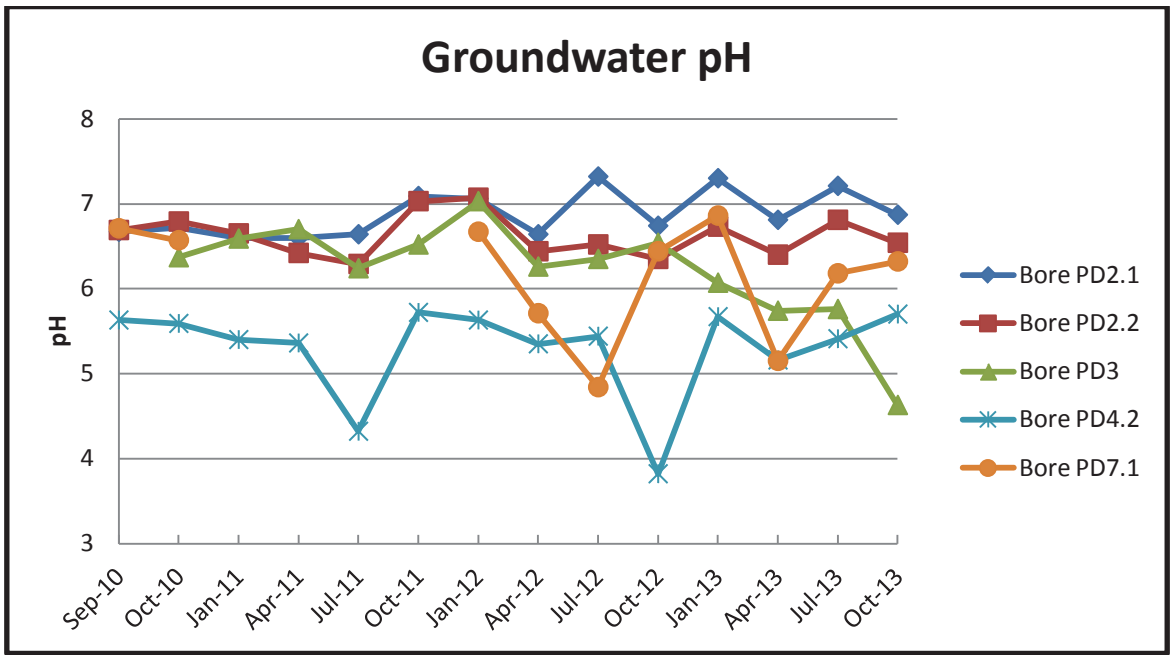


Figure 8: Groundwater pH

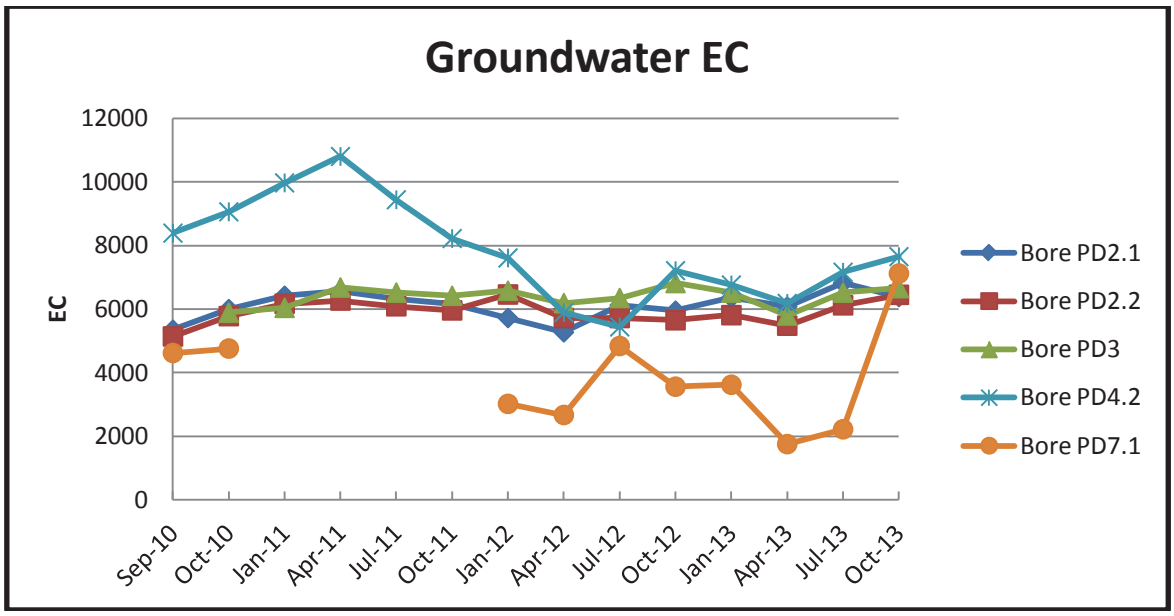


Figure 9: Groundwater EC

3.4.3 Environmental Incidents

No reportable incidents relating to groundwater pollution occurred during the reporting period.

3.4.4 Further Improvements

The groundwater monitoring program will be continued in accordance with WMP requirements. As more groundwater data is collected any long-term trends may be identified.

3.5 Contaminated Land

3.5.1 Environmental Management

No contaminated or polluted land has been identified at Bloomfield. No significant hydrocarbon or chemical spills occurred within the Lease requiring special response, clean-up or ongoing management.

3.5.2 Environmental Performance

Quarterly inspections of hydrocarbon storage facilities are completed as part of the site EMS, and no land contamination or significant polluting incidents were reported during these inspections.

3.5.3 Reportable Incidents

No reportable incidents relating to land contamination occurred during the reporting period.

3.5.4 Further Improvements

As no areas of land contamination have been identified, no improvements to the current management system are planned. Quarterly inspections will be maintained.

3.6 Threatened Flora and Fauna

3.6.1 Environmental Management

The Environmental Assessment included an assessment of the potential impacts associated with the clearance vegetation. Any clearing of vegetation within the project area must be undertaken in accordance with the requirements of the Project Approval.

3.6.2 Environmental Performance

Approximately 3 Ha of vegetation was cleared for Bloomfield mining operations during the reporting period. A qualified ecologist carried out a habitat tree assessment on the area. Fourteen habitat trees (7 dead stags, 2 *Eucalyptus crebra*, 5 *Eucalyptus acmenoides*) were identified, marked and found to contain a total of sixteen hollows. Following the assessment, Bloomfield cleared around the identified habitat trees and allowed them to stand for a number of days, encouraging any fauna species present to self-relocate.

The Fourteen habitat trees identified were felled under the supervision of the same ecologist. All trees were felled using the ‘soft-fell’ technique. Before commencing, this technique was explained to the excavator operator and positive communication between the operator and ecologist was held throughout soft- felling. For this process, each tree was nudged several times to allow any fauna species to self-relocate before being felled as gently as possible. All hollows and potential habitat fissures were inspected after each tree was soft- felled.

One fledgling Kookaburra (*Dacelo novaeguineae*) was identified and captured during the soft fell process. Two old glider nests were identified in two separate hollows (no individuals present). No other fauna species were identified in the remaining habitat hollows. The fledgling Kookaburra was taken to Greenhills Veterinary Hospital where it will be raised and given to a carer before being released back into the wild.

A Biodiversity Offset Area has been established to compensate for future land clearance at the mine. The land was purchased by Bloomfield in December 2011 and consists of 40 Ha of remnant vegetation adjacent to the Watagan State Forest. The western boundary abuts a part of Watagan State Forest on the eastern side of the Corrabare Range. A Biodiversity Offset Management Plan was submitted to DP&I for approval in November 2011. Bloomfield is waiting on approval of the Plan before undertaking conservation works on the site.

3.6.3 Reportable Incidents

No reportable incidents relating to flora and fauna management occurred during the reporting period.

3.6.4 Further Improvements

Further details on progress of the implementation measures of the Biodiversity Offset Area will be provided in the next AEMR.

3.7 Weeds & Pests

3.7.1 Environmental Management

Bloomfield undertakes regular inspections and has a treatment program to control weeds across the site. A contract weed-sprayer is employed in addition to mechanical support from mine plant such as dozers and backhoes when required. Over the reporting period priority was given to the control of pampas grass, blackberry and mother-of-millions. Lantana was also targeted during the reporting period.

Periodic feral animal control programs are undertaken in conjunction with neighboring mines. Activities include feral dog baiting programs. These programs are conducted on an as need basis.

3.7.2 Environmental Performance

Approximately $58,500 was spent across the site on weed control during the reporting period. This consisted of a combination of spraying and slashing. Weed control works included rehabilitation areas and remnant vegetation within CCL 761 as well as land outside the mining lease under the control of Bloomfield. No Class 1 or Class 2 declared weeds were identified onsite. The following weed species were identified and treated during the reporting period included:

- Mother-of-millions (class 3)
- Parramatta Grass (class 3)
- Pampas Grass (class 4)
- Blackberry (class 4)
- Crofton Weed (class 4)
- Noogoora Burr (class 4)
- Lantana (class 5)
- African Daisy.

During the reporting period a wild dog and fox baiting program was undertaken in conjunction with neighbouring mines and the Livestock Health and Pest Authority. This was conducted in May 2013. The baiting program proved to be very successful with numerous baits taken.

3.7.3 Reportable Incidents

No reportable incidents relating to weed management occurred during the reporting period.

3.7.4 Further Improvements

The weed management budget for the upcoming reporting period will be maintained at a similar level to previous years. The control of pampass grass and African daisy remains the priority for the next reporting period in addition to the ongoing management of Lantana.

3.8 Blasting

3.8.1 Environmental Management

A blast monitoring plan has been prepared in accordance with the conditions of the Project Approval. It is expected that the blast monitoring plan will be endorsed by the Director General during the next reporting period. Blasting activities are licensed under EPL 396. The EPL stipulates monitoring requirements, restricts blasting hours, as well as limiting airblast overpressure and ground vibration impacts at the nearest residences.

Blasting techniques have been developed in conjunction with ORICA, utilising the “nonel” initiation system and implemented to achieve maximum fragmentation and maintain levels ground vibration and overpressure levels within the approved criteria for the site.

Each blast is monitored at four nearby residences for ground vibration and overpressure. Monitors are located at residences to the south, south-east, west and north-west of current open cut operations. The location of the blast monitors is shown on Plan 1.

Also the use of a predictive meteorological modeling software program is utilised to assist in planning blast operations. The software incorporates regional weather station data to predict daily weather events that may exacerbate overpressure impacts from blasting operations.

3.8.2 Environmental Performance

All blast results for the reporting period are included in Appendix C and are summarised in Table 10 and Table 11.

During the reporting period a total of 114 blasts were initiated on the site. Of these, three (2.6% of total shots) exceeded 115 dB blast overpressure. No blasts exceeded 120 dB blast overpressure limits. No blasts exceeded 5 mm/sec ground vibration. .

Table 10: Blast Monitoring Summary

Blasting Criteria Limits	Allowable Exceedance[1]	Results 2013
Airblast Overpressure Level dB (Lin Peak)		
115	5 %	2.6 %
120	0 %	0 %
Ground Vibration Peak Particle Velocity (mm/s)		
5	5 %	0 %
10	0 %	0 %

Note: 1. Percentage of the total number of blasts over a period of 12 months

Blast modelling predictions conducted as part of the Environmental Assessment (PA 07_0087) are shown in Table 11. Monitoring during the reporting period indicates that mean and median results are at or below predicted levels.

Table 11: Blast Predictions

Location	N – Elliotts		M - MacNaughtons		H - Mt Vincent Rd		G - Richards	
	Airblast dBL	Vibration mm/s	Airblast dBL	Vibration mm/s	Airblast dBL	Vibration mm/s	Airblast dBL	Vibration mm/s
Max	115.9	3.7	118.2	0.9	108.1	0.8	113.9	1.6
Min	88.6	0.2	93.2	0.1	83.8	0.03	80.3	0.04
Mean	102.5	0.9	105.5	0.5	96.2	0.2	99.0	0.3
Median	103.0	0.6	104.6	0.4	96.5	0.2	98.5	0.2
EA Prediction	**113.0**	**4.8**	**103.5**	**1.2**	**96.5**	**0.4**	**102.1**	**1.0**

3.8.3 Reportable Incidents

No reportable incidents relating to blasting occurred during the reporting period.

3.8.4 Further Improvements

Monitoring of blasts will continue in accordance with EPL and Project Approval requirements.

3.9 Operational Noise

3.9.1 Environmental Management

A noise monitoring plan has been prepared in accordance with the conditions of the Project Approval. The noise monitoring plan was endorsed by the Director General during the reporting period. Quarterly noise monitoring has been undertaken in accordance with the monitoring plan.

The use of a predictive meteorological modeling software program is utilised to assist in planning mine operations. The software incorporates regional weather station data to predict daily weather events that may exacerbate noise impacts from operations.

3.9.2 Environmental Performance

Attended quarterly noise monitoring was undertaken during the reporting period which assessed noise impacts from Bloomfield Colliery against relevant criteria detailed within PA 07_0087. The respective criteria for each of the five locations and a summary of the attended noise monitoring results undertaken during the reporting period are presented in Appendix D. The results in Appendix D are the results obtained in the absence of all other noise sources.

The monitoring showed one exceedance of the consent criteria at Location M in June 2013. In accordance with Schedule 4 Condition 1 of the project approval Bloomfield notified the DP&I and the affected landowner.

All other monitoring indicated that compliance with consent criteria was met at all locations during day, evening and the night-time periods.

3.9.3 Reportable Incidents

The monitoring exceedance at Location M in June 2013 was reported to the DP&I and the affected landowner, in accordance with Schedule 4 Condition 1 of the project approval. No other reportable incidents relating to operational noise occurred during the reporting period.

3.9.4 Further Improvements

Use of the predictive meteorological modeling software program will be refined with the incorporation of Williamstown meteorological data. This will enable more accurate weather predictions to be made.

3.10 Visual, Stray Light

3.10.1 Environmental Management

Progressive rehabilitation of disturbed land is the main strategy for minimising visual impacts. In addition to providing a safe and stable landform, one of the key objectives of rehabilitation planning is to provide vegetated landforms that blend with the surrounding landscape.

Fixed lighting around the site has been positioned and/or shielded where possible to minimise light shed. Consideration is also given to the location and alignment of mobile light to minimise stray light.

3.10.2 Environmental Performance

The visual assessment of the Bloomfield open cut noted that the main visual impacts are on residences to the south of John Renshaw Drive, to the south of the mine.

3.10.3 Reportable Incidents

No reportable incidents relating to visual amenity or stray light occurred during the reporting period.

3.10.4 Further Improvements

Rehabilitation of areas visible from nearby residences or road traffic will be given priority during mine planning and rehabilitation scheduling.

3.11 Aboriginal Heritage

3.11.1 Environmental Management

In response to a condition of the Project Approval, an Aboriginal Cultural Heritage Management Plan (ACHMP) was prepared in consultation with Mindaribba LALC. The plan was endorsed by DECCW and the Director General of Planning during the reporting period.

3.11.2 Environmental Performance

A number of Aboriginal sites identified during the Project Approval process were previously salvaged in accordance with the ACHMP. Representatives from Mindaribba LALC participated and monitored the process ahead of preparation for mining activities. In all, 34 artefacts were salvaged and are being stored with the Mindaribba LALC.

3.11.3 Reportable Incidents

No reportable incidents relating to Aboriginal heritage occurred during the reporting period.

3.11.4 Further Improvements

In accordance with the approved ACHMP Bloomfield will engage the Mindaribba LALC to monitor any initial ground disturbance works (that will affect the upper or A unit soil) that will be required within the area cleared as described in Section 3.6.2. Any Aboriginal heritage evidence that is identified will be managed in accordance with the ACHMP and reported in the 2014 AEMR.

3.12 Natural Heritage

3.12.1 Environmental Management

No National Parks, nature reserves, or other areas of protected natural heritage are located near Bloomfield. The nearest, Pambalong Nature Reserve, is located approximately 6km to the south-east of Bloomfield mining operations. Therefore, natural heritage management is not considered a significant environmental risk.

3.12.2 Environmental Performance

N/A

3.12.3 Reportable Incidents

No reportable incidents relating to natural heritage occurred during the reporting period.

3.12.4 Further Improvements

No improvements are planned with regards to natural heritage management.

3.13 Spontaneous Combustion

3.13.1 Environmental Management

There was no spontaneous combustion incidences recorded during the reporting period. Historically the site does not have a problem with spontaneous combustion and no management actions were required during the reporting period.

3.13.2 Environmental Performance

N/A

3.13.3 Reportable Incidents

No reportable incidents relating to spontaneous combustion occurred during the reporting period.

3.13.4 Further Improvements

No improvements are planned with regards to spontaneous combustion management.

3.14 Bushfire

3.14.1 Environmental Management

A Bushfire Management Plan for Bloomfield Colliery was prepared in consultation with representatives of the NSW Rural Fire Service (RFS). The plan divides the site into 44 fire management Sectors, describes fire risk levels across the site, and outlines site features relevant to fire management such as vegetation type, access trail locations, asset locations, and water supplies.

Weather conditions permitting, hazard reduction burns are conducted periodically by the RFS. Selection of burn location is based on risk levels, as determined by fuel load assessment and location of assets/asset protection zones. Hazard reduction clearing/slashing was also undertaken by Bloomfield along fire trails, asset protection zones and the mine boundary.

3.14.2 Environmental Performance

An asset protection zone adjacent to residential areas near Ashtonfield and Buchanan was slashed and maintenance work carried on a number of tracks to enable access for hazard reduction activities by the RFS. A hazard reduction burn was planned but not undertaken due to persistent unfavourable weather conditions.

3.14.3 Reportable Incidents

No reportable incidents relating to bushfire management occurred during the reporting period.

3.14.4 Further Improvements

No improvements to the Bushfire Management Plan are planned, however, ongoing hazard reduction burning and clearing will continue in consultation with the RFS. A hazard reduction burn is planned for winter 2014.

3.15 Mine Subsidence

3.15.1 Environmental Management

Areas of the Bloomfield mine site (CCL 761) are undermined by historic underground workings, some relatively shallow. Sink holes associated with shallow workings are infrequent, but have previously been identified. If identified, the standard management procedure is to flag off and isolate the sink holes from access, back fill the holes and monitor for further subsidence. Once deemed stable, the area will then be rehabilitated and periodical inspections will continue.

3.15.2 Environmental Performance

A sink hole was identified during 2012 located in X-Cut near Buchan Road. There is no damage to any infrastructure.

3.15.3 Reportable Incidents

No reportable incidents relating to subsidence management occurred during the reporting period.

3.15.4 Further Improvements

The identified sink hole will be back filled and rehabilitated during 2013. Other than the remediation and rehabilitation of sink holes as identified, no improvements to subsidence management are planned.

3.16 Hydrocarbon Contamination

3.16.1 Environmental Management

As no areas of hydrocarbon contamination have been identified within the Bloomfield lease area, management is geared to contamination prevention. Bulk hydrocarbon storages (including the NALCO products) are located within bunded areas. The volumes of these bunded areas are capable of containing greater than 110% of the largest storage tank.

All machinery is fitted with quick fill mechanisms. The inlets and outlets, at the refueling bay and mobile tanker are positively closed with an automatic cut off when full. This refueling method is quick and minimises any potential for spillage during the refueling operation.

Hydrocarbon storage infrastructure at the CHPP and open cut is inspected regularly and documented maintenance check sheets are completed quarterly.

3.16.2 Environmental Performance

No major areas of hydrocarbon contamination were identified during the reporting period.

3.16.3 Reportable Incidents

No reportable incidents relating to hydrocarbon contamination occurred during the reporting period.

3.16.4 Further Improvements

A dedicated contaminated soil land farming area will be established in 2014 to treat on-site any hydrocarbon contaminated soil.

3.17 Public Safety

3.17.1 Environmental Management

Being situated close to urban areas, Bloomfield has historically had a problem with dumping of rubbish, theft and vandalism on the site. A major fencing and exclusion barrier program has greatly reduced these occurrences. Bloomfield continues to invest significant time and resources into keeping the site closed to unauthorised access, including fencing along all public roads, installing lockable gates and other temporary barriers (such as logs, rocks and concrete blocks) on major access tracks and ensuring clear signage is placed covering likely approaches.

3.17.2 Environmental Performance

No public safety incidents were recorded or reported during the reporting period.

3.17.3 Reportable Incidents

No reportable incidents relating to public safety during the reporting period.

3.17.4 Further Improvements

No overall improvements are planned to manage public safety; however, Bloomfield will continue to maintain existing fencing, gates, barriers and signage.

4 COMMUNITY RELATIONS

4.1 Environmental Complaints

Nine community complaints were received during the reporting period and a summary is provided below (Table 12).

Table 12: Community Contacts Register

Date	Issue	Type	Location
04-Apr-13	Noise	Resident	Ashtonfield
07-Apr-13	Noise	Resident	Thornton
22-May-13	Blasting	Resident	Tenambit
10-Jul-13	Noise	Resident	Ashtonfield
08-Aug-13	Blasting	Resident	Buttai
29-Aug-13	Dust	Resident	Black Hill
15-Oct-13	Noise	Resident	Buttai
21-Oct-13	Noise	Resident	Buttai
28-Nov-13	Noise	Resident	No details provided

Figure 10 displays a comparison of complaints with previous reporting periods, which demonstrates a decline in the number of complaints received.

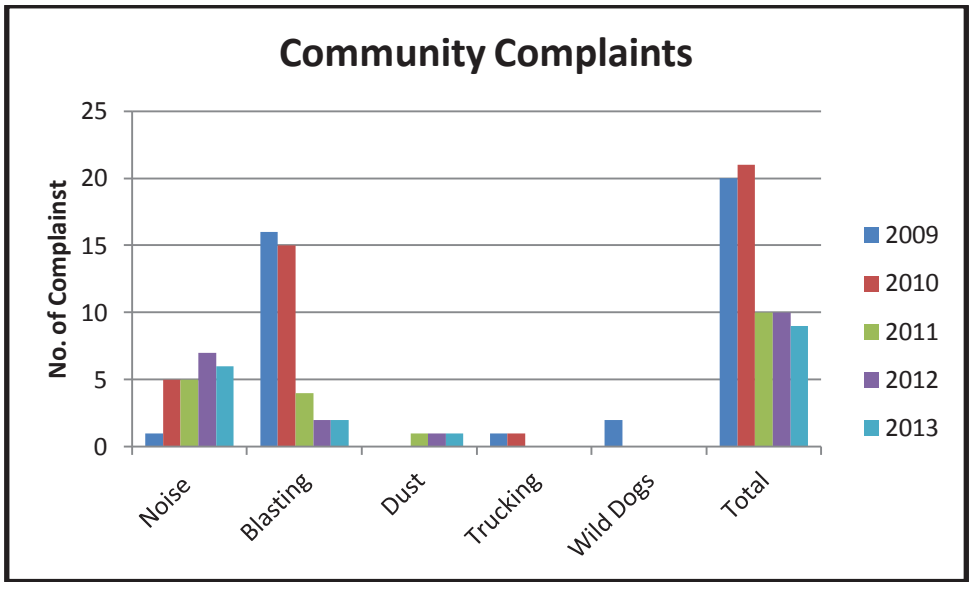


Figure 10: Community Complaints

4.2 Community Liaison

4.2.1 Community Consultative Committee

In accordance with the Project Approval, a Community Consultative Committee (CCC) has been established. The CCC meets three times a year basis. Additional information about the operation has been included on the company website (www.bloomcoll.com.au) and information about blasting schedules advertised quarterly in local newspapers.

4.2.2 Adopt-a-Road Program

Bloomfield is a participant in Cessnock City Council's Adopt-a-Road program. Bloomfield has entered into a three year agreement with the Council to undertake litter collection campaigns along Buchanan Road, between John Renshaw Drive and Louth Park Road, Buchanan. Bloomfield has contracted the Kurri Kurri Community Center Inc to conduct quarterly litter collection programs.

4.2.3 Community Sponsorship

The Bloomfield Group has a commitment to support local community projects and activities. As part of this commitment, during 2013 financial sponsorship was provided for the following community groups, schools, charities and community events:

- Academy Publishing Ltd Maitland Metford Schools
- ARTC Charity Ball
- Ausimm
- Australian Red Cross Good Start Breakfast Club
- Australian Signing Council
- Bellbird Country Music Club
- Beresfield Scouts
- Bishop Tyrrell College Prizes ABW
- Blandford Public School P&C
- Branxton Public School
- Can Assist
- Cancer Council of NSW
- Cancer Council Relay For Life
- Carrie's Place
- Catholic Development Trivia night
- Cerebral Palsy Alliance
- Chuck Duck & Rooster Cluck's Brekky Club
- Chuck Duck & Rooster Cluck's Good Life Truck
- CJ Angels Netball
- Country Education Foundation of Australia
- Curlewis Campdraft
- Cutcher & Neale Golf Day
- Darlington Rural Fire Service
- Domestic Violence Support & Advisory Service

- Electrk Dancers
- Fire Star Maitland Family Day Care
- Friends Of Palliative Care Inc
- Giant Steps Sydney
- Heart Foundation
- Hunter Medical Research Institute
- HMRI Breast Cancer Grant
- HMRI In Memory of Karen Brown
- Hunter Valley Grammar School
- Iona Public School Horse Sports
- John Hunter Children's Hospital Neonatal Intensive Care Unit
- Kurri Kurri Community Centre Litter Clean up
- Kurri Kurri District Business Chamber
- Lake Macquarie High School
- Leukaemia Foundation
- Lions Club of Adamstown
- Mai-Wel Group
- Maitland Aroma Festival 2013
- Maitland Grossman High
- Maitland Grossman High F1 in Schools
- Maitland Netball Association
- Maitland Polocrosse Club
- Maitland Rugby Union Club
- Maitland Taste Festival
- Matthew Storey Foundation
- Morpeth Public School
- Motor Neurone Disease Association
- Movember
- MS Australia
- Murrurundi Bushmen's Carnival Assoc
- Muswellbrook Harness Racing Club
- Northern Agricultural Association
- NSW Minerals Council Helicopter Appeal
- Red Shield Appeal
- Rotary Club of Rutherford
- Salvation Army N'cle Division Xmas Programs
- Samaritans Foundation
- Sids and Kids Hunter Region
- Singleton Family Support Inc
- Singleton High School
- Singleton Legacy
- Singleton Town Band
- Soul Cafe
- Special Childrens Xmas Party
- St George Charity Day Picture Framing Raffle Prize
- Standford Methyr Infants School
- Steamfest

- Stratco R&M YOTS
- Taylah Hollingshed
- The Smith Family
- Thornton Public School
- Ulinga Netball Club
- UNSW Mining Engineering International Field Trip
- Variety the Children's Charity
- We Help Ourselves
- Wean Amateur Picnic Race Club
- West Wallsend Public School
- World Greatest Shave The Leukaemia Foundation.
- World Skills Australia
- Youth Off The Streets

5 REHABILITATION

5.1 Buildings

There have been no buildings or structures decommissioned over the site during the reporting period.

5.2 Rehabilitation of Disturbed Land

The Mining Operations Plan (MOP) 2012-2016 for Bloomfield Collieries has been accepted by DRE. The MOP was prepared under DREs new Interim MOP Guidelines.

Landscape re-contouring, topsoil handling and revegetation techniques are well established at Bloomfield. The objectives of the rehabilitation program being:

- To establish post-mining surfaces and vegetation cover which ensure a safe and stable landform of land capability class equal to that which existed prior to mining disturbance.
- Return the land to a condition suitable for a range of post-mining landuses, which take into account the proximity of the site to the urban areas of Maitland and possible future development demands.
- Create landforms that can accommodate overburden and waste products produced during coal mining and processing, and merge with adjoining undisturbed landforms.
- Reinstate a surface drainage network on the rehabilitated landforms that is hydrologically stable and incorporates adequate erosion and sediment control structures so as to effectively protect adjoining areas from potential water-borne impacts.
- Undertake a maintenance program to ensure the continued sustainability of previously rehabilitated areas.

Rehabilitation is carried out throughout the year, with the aim of timing vegetation seeding operations in Spring and Autumn.

The majority of the lease area is relatively undisturbed remnant native bushland and no other activities are carried out on the area other than the mining operation. To date 448 Ha has been rehabilitated.

As reported in the previous AEMR, the major rehabilitation program undertaken over the past decade has now resulted in only relatively small areas becoming available for rehabilitation each year. Combined with this was an expansion of dumping area over areas previously categorised as rehabilitated. The expansion of the dumping areas ceased in 2012 and as such there has been an increase in rehabilitated land. A total of 15 ha of land were rehabilitated during the reporting period (see Table 13).

The 15 Ha of rehabilitation completed during the reporting period exceeds the MOP rehabilitation for 2013 which was estimated to be 8.6 Ha. Plan 2 provides an overview of the site showing areas previously rehabilitated, rehabilitation undertaken during the reporting period, shaped areas ready for rehabilitation, unshaped areas (active dumps), and active mining areas.

Table 13: Rehabilitation Summary

		Area Affected/Rehabilitated (hectares)			
		To date	Last report	Next Report (estimated)	
A:	**MINE LEASE AREA**				
A1	**Mine Lease(s) Area**	1,453			
B:	**DISTURBED AREAS**				
B1	**Infrastructure area** (other disturbed areas to be rehabilitated at closure including facilities, roads)	72	73	72	
B2:	**Active Mining Area** (excluding items B3 – B5 below)	73	74	75	
B3	**Waste emplacements**, (active/unshaped/in or out-of-pit)	152	150	148	
B4	**Tailings emplacements,** (active/unshaped/uncapped)	87	87	87	
B5	**Shaped waste emplacement** (awaits final vegetation)	14	16	9	
ALL DISTURBED AREAS		398	400	391	F1
C	**REHABILITATION PROGRESS**				
C1	**Total Rehabilitated area** (except for maintenance)	448	433	455	F2
D:	**REHABILITATION ON SLOPES**				
D1	**10 to 18 degrees**	28	28	28	
D2	**Greater than 18 degrees**	-	-	-	
E:	**SURFACE OF REHABILITATED LAND**				
E1	**Pasture and grasses**	443	427	450	
E2	**Native forest/ecosystems**	-	-	-	
E3	**Plantations and crops**	5	5	5	
E4	**Other** (include nonvegetative outcomes)	-	-	-	

Table 14 provides a summary of the maintenance activities during the period and activities proposed for the next reporting period.

Table 14: Maintenance Activities on Rehabilitated Land

NATURE OF TREATMENT	Area Treated (ha)		Comment/control strategies/ treatment detail
	Report period	Next period	
Additional erosion control works (drains re-contouring, rock protection**)**	-	-	Construction of contour drain to manage run off from expanded workings.
Re-covering (detail – further topsoil, subsoil sealing etc)	-	0.5	Small, isolated bare patches & washouts across the site to be ripped, retreated with lime, biosolids and/or fertiliser, and re-seeded during the next reporting period. Actual areas small and difficult to calculate.
Soil treatment (detail – fertiliser, lime, gypsum etc)	-	-	See "Re-covering" above.
Treatment/Management (detail – grazing, cropping, slashing etc)	- 5	74 5	The southern area of X Cut to be fenced and cattle grazing introduced to maintain pasture. Slashing of established rehabilitation to encourage nutrient recycling and, where needed, fertiliser application.
Re-seeding/Replanting (detail – species density, season etc)	-	-	See "Re-covering" above.
Adversely Affected by Weeds (detail - type and treatment)	-	-	Continual localised areas of weed treatment across all disturbed areas (see Section 3.7), but no specific areas of intensive treatment.
Feral animal control (detail – additional fencing, trapping, baiting etc)	1500	1500	Feral dog baiting undertaken during the reporting period in consultation with other large land holders in the area.

5.3 Further Development of the Final Rehabilitation Plan

In accordance with the Project Approval, the Landscape Management Plan, Rehabilitation Management Plan, Mine Closure Plan and Final Void Management Plan have been prepared and submitted to DP&I for approval. These documents outline the rehabilitation planning, operation and monitoring process for Bloomfield Group mining operations. All are expected to be approved during the next reporting period.

Under the current mine plan mining will cease at Bloomfield in 2021. The Bloomfield washery, rail loader and tailings facility will continue to operate after the mining is scheduled to be completed. The continued use of the washery, rail loader and tailings facility is approved under Project Approval 05_0136 for the Abel Underground Mine. These items associated with the operation of the washery are currently used to process coal from Bloomfield, Abel and Tasman mines. When mining is completed at Bloomfield Colliery, the washery will continue processing coal from the Abel and Tasman mines. Project Approval 05_0136 permits operations until 2030.

The final void remaining at the end of mining will be used as the tailings facility for the washery operations. An estimated 20 M m^3 of storage capacity will be required for the final void as a tailings facility. This will be used for the disposal of approximately 18 M m^3 of waste rejects and a further 2 M m^3 of overburden capping. The tailings material will be capped with 2 metres of overburden material and soil and rehabilitated. Overburden material and topsoil

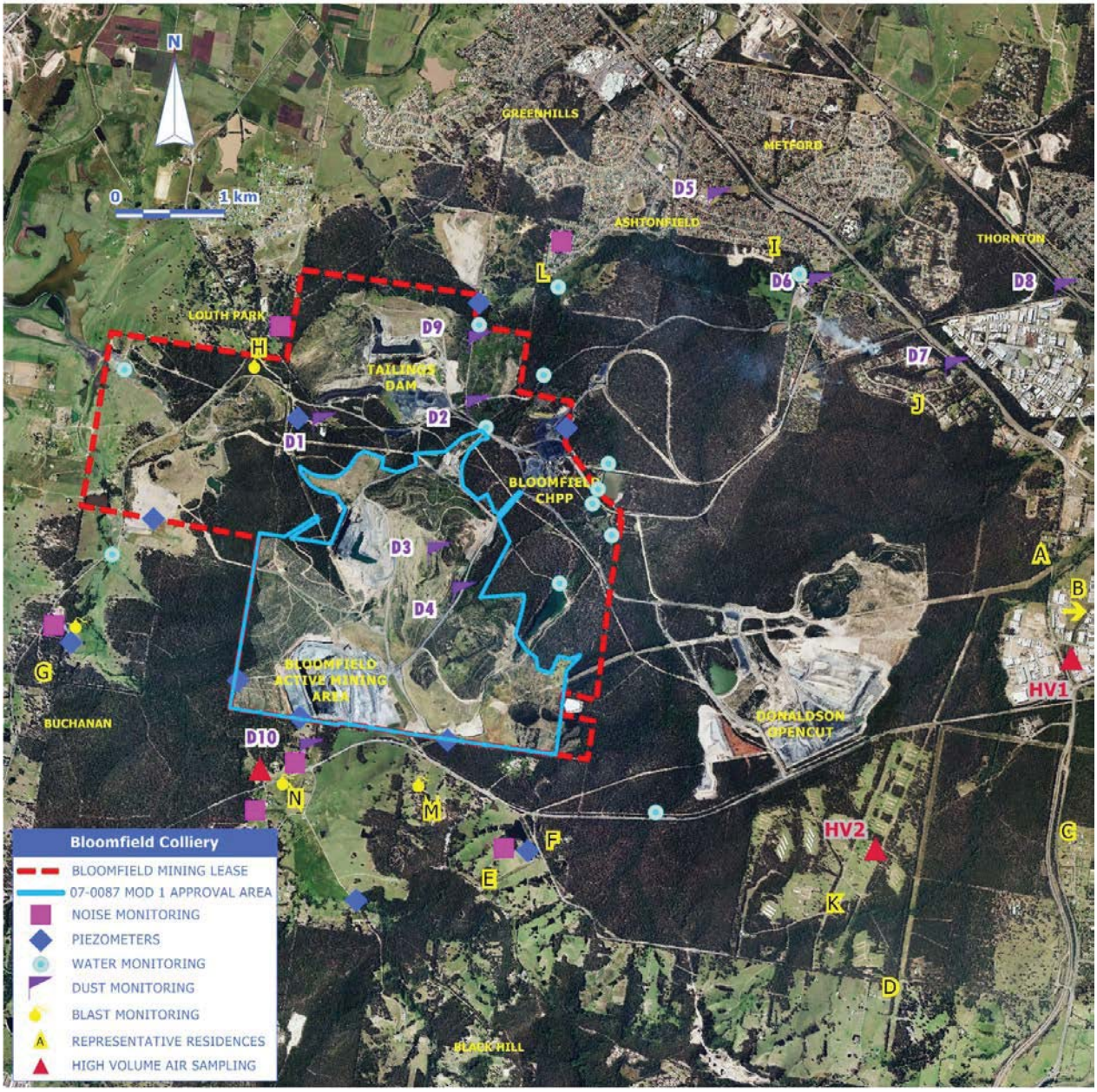
will be stockpiled adjacent to the final void towards the end of Bloomfield mining operations to be utilised for final closure when washery operations are completed in 2030.

6 ACTIVITIES PROPOSED IN THE NEXT AEMR PERIOD

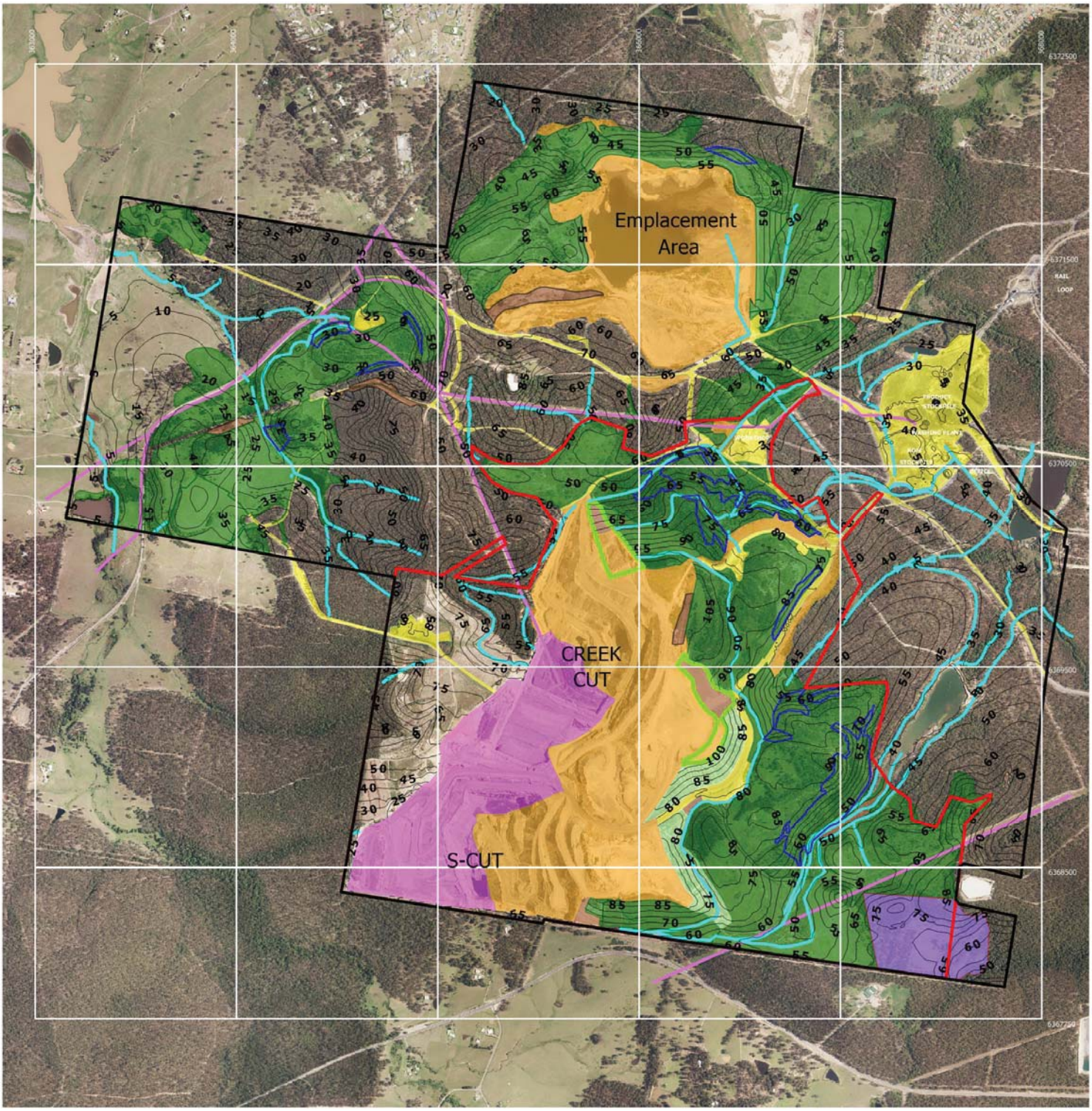
The activities for the ensuing year will generally be in accordance with the rehabilitation and landscape management strategy outlined in the Environmental Assessment and the MOP schedule. Environmental activities proposed for the next AEMR period have been previously reported within relevant sections of this document.

In accordance with the rehabilitation and landscape management strategy outlined in the Environmental Assessment and the MOP, an approximately 74 Ha area of the established rehabilitation area will be fenced and stock introduced for grazing purposes. The area will consist of the southern part of X-Cut along Buchanan Road. Further details will be provided in the next AEMR.

PLANS



Plan 1 – Environmental Monitoring Sites



LEGEND

0 — 1 km

Contour Interval 5m

N

- Contour (m AHD)
- Clean Water
- Dirty Water
- Approval Area
- Colliery Holding
- Slopes 10 to 18 Degrees
- Power Lines
- Relinquished
- Previous Rehabilitation
- 2013 Rehabilitation
- Unshaped Areas
- Shaped Areas
- Active Areas
- Infrastructure
- 2014 Rehabilitation

THE Bloomfield GROUP

Bloomfield Colliery

Annual Environmental Management Report

Plan 2 — Rehabilitation Plan 2013

Scale: 1:20000	Date: December 2013 Photo: December 2013	Drawing: A3

APPENDIX A

PM10 and TSP Results 2012

Date	TSP Concentration (ug/m^3)	PM_{10} Concentration (ug/m^3)
3/01/2013	33	14
9/01/2013	82	36
15/01/2013	40	15
21/01/2013	50	21
27/01/2013	17	8
2/02/2013	20	8
8/02/2013	51	23
14/02/2013	30	12
20/02/2013	33	13
26/02/2013	38	19
4/03/2013	36	14
10/03/2013	67	11
16/03/2013	38	19
22/03/2013	68	26
28/03/2013	54	23
3/04/2013	26	13
9/04/2013	21	9
15/04/2013	53	26
21/04/2013	9	3
27/04/2013	35	16
3/05/2013	42	17
9/05/2013	27	9
15/05/2013	25	7
21/05/2013	43	18
27/05/2013	36	10
2/06/2013	13	6
8/06/2013	23	11
14/06/2013	14	5
20/06/2013	33	13
26/06/2013	24	11
2/07/2013	22	9
8/07/2013	25	11
14/07/2013	16	9
20/07/2013	12	6
26/07/2013	39	14
1/08/2013	21	10
7/08/2013	35	11
13/08/2013	31	11
19/08/2013	36	16
25/08/2013	46	21
31/08/2013	54	25
6/09/2013	76	33
12/09/2013	64	28
18/09/2013	24	8
24/09/2013	83	33
6/10/2013	33	13
9/10/2013	44	20
12/10/2013	45	26
18/10/2013	62	36

Date	TSP Concentration (ug/m^3)	PM_{10} Concentration (ug/m^3)
24/10/2013	72	46
30/10/2013	29	11
5/11/2013	38	16
11/11/2013	-	7
17/11/2013	14	4
19/11/2013	17	-
23/11/2013	11	6
29/11/2013	37	21
5/12/2013	27	14
11/12/2013	64	34
17/12/2013	34	17
23/12/2013	80	40
29/12/2013	56	31
Maximum 24 hr Average	-	46
EPA Limit 24hr Average	-	**50**
Annual Average	38	17
EPA Limit Annual Average	**90**	**30**

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APPENDIX B

WATER DISCHARGE MONITORING RESULTS

Discharge Monitoring Results 2012

DATE	pH	TOTAL SUSPENDED SOLIDS (mg/L)	TOTAL DISSOLVED SOLIDS (mg/L)	SPECIFIC CONDUCTANCE (uS/cm)	IRON (mg/l)	DISCHARGE VOLUME (ML/day)
23-Jan-12	8.0	5	3,940	4,790	<0.05	40
25-Jan-12	8.1	9	4,200	5,260	<0.05	40
26-Jan-12	8.3	11	3,930	5,010	<0.05	40
27-Jan-12	8.4	15	3,610	4,670	<0.05	40
03-Feb-12	8.2	13	4,220	5,300	<0.05	40
04-Feb-12	8.1	12	3,240	4,040	<0.05	40
13-Feb-12	8.0	11	4,370	5,160	<0.05	40
14-Feb-12	8.5	18	3,480	4,270	<0.05	40
20-Feb-12	8.2	11	3,110	3,860	<0.05	40
02-Mar-12	8.0	9	3,520	4,110	<0.05	40
03-Mar-12	8.0	8	3,400	4,100	<0.05	40
04-Mar-12	7.8	24	1,780	2,340	<0.05	40
20-Mar-12	7.9	7	4,580	5,170	<0.05	40
27-Mar-12	8.0	12	4,760	5,390	0.77	40
28-Mar-12	8.3	15	2,980	3,950	<0.05	40
09-Apr-12	8.1	6	4,620	5,120	0.08	40
10-Apr-12	8.3	21	3,530	4,230	0.08	40
16-Apr-12	8.1	24	3,450	4,240	<0.05	40
17-Apr-12	8.4	16	2,140	3,030	<0.05	40
03-Jun-12	8.3	12	3,940	4,770	<0.05	40
04-Jun-12	8.5	14	1,710	2,530	<0.05	40
12-Jun-12	8.3	19	3,820	5,330	<0.05	40
26-Jun-12	8.3	11	4,630	5,730	<0.05	40
27-Jun-12	8.3	11	3,250	4,360	<0.05	40
06-Jul-12	8.2	18	3,930	5,120	<0.05	40
07-Jul-12	8.3	14	3,250	4,470	<0.05	40
13-Jul-12	8.2	9	2,080	3,110	<0.05	40
14-Jul-12	8.3	10	2,220	3,430	0.20	40
23-Jul-12	8.3	9	3,800	4,740	<0.05	40
24-Jul-12	8.4	6	3,290	4,120	<0.05	40
11-Aug-12	8.3	6	4,460	5,360	<0.05	40
19-Sep-12	8.4	2	3,240	4,430	<0.05	40
17-Nov-12	8.1	1	4,580	6,010	<0.05	40
27-Nov-12	8.3	5	3,820	5,100	<0.05	40
11-Dec-12	8.3	6	4,050	5,540	<0.05	40
Average	**8.2**	**11**	**3,569**	**4,520**	**<0.1**	**40**
Maximum	**8.5**	**24**	**4,760**	**6,010**	**0.77**	**40**
Minimum	**7.8**	**1**	**1,710**	**2,340**	**<0.05**	**40**

.

APPENDIX C

BLAST MONITORING RESULTS

BLAST RESULTS 2013

EPL No. 396
Licencee: Bloomfield Collieries Pty Ltd
Premises: Bloomfield Colliery
Four Mile Creek Rd
Astonfield NSW 2323

Monitoring Frequency: Every blast
Airblast Overpressure Limit: 120 dB(Lin Peak)
Ground Vibration Limit: 10 mm/s

		Blast Monitor Location											
		Elliot's Residence			McNaughton's Residence			Mt Vincent Rd Residence			Richards Residence		
Shot No.	Date & Time	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance
6346	10.01.2013 10.03am	2.41	106.9	943	0.82	93.2	1739	0.55	96.1	2959	1.16	109.4	2078
6347	11.01.2013 1.46pm	DNR	DNR	837	DNR	DNR	1411	DNR	DNR	3085	0.08	91.4	2429
6348	15.01.2013 1.51pm	DNR	DNR	896	DNR	DNR	1477	DNR	98.3	3016	0.08	107.4	2377
6349	16.01.2013 1.24pm	DNR	DNR	805	DNR	DNR	1459	DNR	DNR	3097	0.07	84.7	2364
6350	17.01.2013 1.51pm	DNR	DNR	1155	DNR	DNR	1652	Fault*		2761	0.07	89.7	2315
6351	21.01.2012 9.52am	DNR	DNR	873	DNR	DNR	1508	DNR	96.1	3027	0.08	103.3	2332
6352	24.01.2013 1.51pm	DNR	DNR	1075	DNR	DNR	1686	DNR	97.3	2880	0.09	102.3	2100
6353	25.01.2013 9.18am	DNR	DNR	1210	DNR	DNR	1640	DNR	DNR	2692	0.07	97.7	2330
6354	25.01.2013 1.48pm	DNR	DNR	1279	DNR	DNR	1602	DNR	97.7	2698	0.07	99.1	2370
6355	31.01.2013 1.35pm	0.36	103	878	0.09	103.6	1881	0.07	91.3	3067	0.13	95	1692
6356	4.02.2013 11.11am	DNR	DNR	1806	DNR	DNR	1895	0.09	101.6	2398	0.09	99.7	2748
6357	5.02.2013 1.51pm	DNR	DNR	1739	DNR	DNR	1972	0.08	100.5	2280	0.09	96	2517
6358	6.02.2013 2.03pm	DNR	DNR	1530	DNR	DNR	1920	0.16	103.9	2401	0.16	106.6	2310
6359	7.02.2013 1.46pm	DNR	DNR	1852	DNR	DNR	2015	0.1	93.3	2371	0.1	95.6	2675
6360	8.02.2013 1.23pm	DNR	DNR	2040	DNR	DNR	2290	0.11	93.3	2051	0.12	94.6	2612
6361	11.02.2013 9.57am	DNR	DNR	1910	DNR	DNR	2114	0.09	100.4	2198	0.1	97.9	2662
6362	13.02.2013 1.50pm	DNR	DNR	1750	DNR	DNR	1793	0.08	102.9	2794	0.07	104.4	2650
6363	14.02.2013 1.50pm	DNR	DNR	1750	DNR	DNR	2065	0.11	98.7	2390	0.12	94.1	2370
6364	15.02.2013 9.37am	DNR	DNR	1857	DNR	DNR	1967	0.11	98.7	2695	0.09	102	2267
6365	15.02.2013 12.17pm	DNR	DNR	1942	DNR	DNR	2137	0.08	92.5	2561	0.1	97.8	2099
6366	19.02.2013 10.13am	DNR	DNR	1792	DNR	DNR	1933	0.1	105.5	2649	0.09	100.7	2302
6367	19.02.2013 2:33pm	DNR	DNR	1795	DNR	DNR	2027	0.08	93.1	2505	0.08	95.7	2218
6368	20.02.2013 10.10am	DNR	DNR	1901	DNR	DNR	2054	DNR	83.8	2630	DNR	80.3	2181
6368	21.02.2013 10:55am	DNR	DNR	772	DNR	DNR	1748	0.07	93.8	2041	0.07	102.6	3187
6369	27.02.2013 1.00pm	1.11	102	1250	0.47	104.6	1650	0.46	85.8	2780	0.58	98.1	2402
6370	27.02.2013 1.55pm	DNR	DNR	1835	DNR	DNR	2010	0.09	100.1	2594	0.1	98.5	2226
6371	28.02.2013 1.47pm	DNR	DNR	1786	DNR	DNR	1967	0.08	92.6	2586	0.09	92.6	2270
6373	7.03.2013 9.55am	DNR	DNR	1775	DNR	DNR	1981	0.09	90.2	2593	0.07	92.9	2256
6374	8.03.2013 11.50am	2.4	93.3	1250	0.61	103.4	1650	0.71	88	2780	1.04	101.6	2402
6375	12.03.2013 10.19am	DNR	DNR	950	DNR	DNR	1706	0.09	97.4	2837	0.12	113.9	2031
6376	19.03.2013 1.46pm	2.3	102.9	791	0.59	110.1	1602	0.27	101.8	2251	0.86	113.9	3124
6377	20.03.2013 1.49pm	0.51	88.6	2040	0.43	103.8	2290	0.41	106.9	2051	0.38	105.1	2612
6378	21.03.2013 12.24pm	0.47	93	873	0.58	102.1	1508	0.34	95.1	3027	0.4	97.6	2332

BLAST RESULTS 2013

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Astonfield NSW 2323

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Ground Vibration Limit: 10 mm/s

		Blast Monitor Location											
		Elliot's Residence			McNaughton's Residence			Mt Vincent Rd Residence			Richards Residence		
Shot No.	Date & Time	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance
6379	26.03.2013 1.29pm	0.33	95.6	1852	0.53	104.1	2015	0.44	96.9	2371	0.36	100.7	2675
6380	27.03.2013 1.08pm	0.71	92.6	1750	0.69	101	2065	0.23	98.4	2390	0.28	98.7	2370
6381	12.04.2013 10.20am	0.55	93.7	1832	0.46	103.2	2008	0.45	96.4	2589	0.41	100.2	2215
6382	15.04.2013 1.49pm	0.35	89.2	1757	0.35	100.5	1921	0.19	100.5	2315	0.27	95.1	2613
6383	23.04.2013 10.12am	1.47	97.1	1046	0.46	113.1	1651	0.32	88	2850	0.49	88.9	2241
6384	23.04.2013 1.34pm	DNR	DNR	1628	DNR	DNR	1981	0.15	100.3	2314	0.16	88.2	2337
6385	24.04.2013 10.20am	1.17	99.5	1190	0.54	111.1	1529	0.42	93.7	2796	0.62	92.6	2504
6386	30.04.2013 1.53pm	1.78	99.2	1152	0.54	112.6	1643	0.41	89.9	2766	0.7	98.8	2326
6388	1.05.2013 1.25pm	DNR	DNR	1757	DNR	DNR	2063	0.22	88.8	2205	0.24	95.6	2389
6389	3.05.2013 1.21pm	DNR	DNR	1654	DNR	DNR	1934	0.13	99.2	2331	0.14	101.2	2447
6390	7.05.2013 11.02am	DNR	DNR	1811	DNR	DNR	1679	0.11	99.1	2348	0.16	99	2444
6391	9.05.2013 1.21pm	DNR	DNR	1430	DNR	DNR	1793	0.09	96.6	2520	0.12	102.5	2380
6392	9.05.2013 1.21pm	2.71	106	852	0.44	105.9	1569	0.32	97	3039	0.91	105.8	2252
6393	22.05.2013 11.15am	DNR	DNR	1433	DNR	DNR	1700	0.14	103.5	2575	Fault*		2515
6394	22.05.2013 11.28am	DNR	DNR	1777	DNR	DNR	1999	0.15	96.5	2245	Fault*		2523
6395	30.05.2013 2.02pm	DNR	DNR	1918	DNR	DNR	2107	0.19	93.8	2129	0.17	91.7	2570
6396	31.05.2013 1.49pm	DNR	DNR	1811	DNR	DNR	2696	0.14	94.8	2314	Fault*		2696
6397	03.06.2013 1.50pm	DNR	DNR	739	DNR	DNR	1672	0.13	98.3	3187	DNR	DNR	2117
6398	04.06.2013 12.31pm	1.89	100.2	821	0.58	103.1	1630	0.34	95.3	3074	DNR	DNR	2173
6399	08.06.2013 10.40am	DNR	DNR	1920	DNR	DNR	2080	0.19	99.7	2155	0.2	101.1	2619
6400	08.06.2013 10.40am	DNR	DNR	1809	DNR	DNR	1988	0.19	99.7	2250	0.2	101.1	2590
6401	12.06.2013 1.25pm	0.22	95	1886	0.35	108.7	1996	0.5	96.5	2240	0.32	95.3	2697
6402	18.06.2013 11.09am	DNR	DNR	1808	DNR	DNR	1861	Fault*	88.6	2378	0.19	91.9	2782
6403	18.06.2013 1.47pm	0.28	89.8	1782	0.2	104.3	1902	Fault*	93.7	2333	0.28	89.8	2681
6404	20.06.2013 1.52pm	DNR	DNR	1749	DNR	DNR	1791	Fault*	94.8	2447	0.17	93.8	2796
6405	24.06.2013 1.44pm	DNR	DNR	756	DNR	DNR	1673	Fault*	95.5	3165	0.13	98	2117
6406	25.06.2013 1.47pm	0.61	97.3	1360	0.34	103.8	1827	Fault*	93.9	2552	0.92	98.3	2255
6407	27.06.2013 12.35pm	DNR	DNR	791	DNR	DNR	1686	0.07	101.7	3126	0.09	110.7	2105
6408	3/07/2013 1.54pm	DNR	DNR	1161	DNR	DNR	1590	0.09	86.6	2781	Fault*	94.3	2403
6409	8/07/2013 1.34pm	DNR	DNR	1035	DNR	DNR	1647	0.07	91.6	2860	Fault*	102.4	2241
6410	11/07/2013 2.01pm	DNR	DNR	960	DNR	DNR	1755	0.08	99.9	2943	0.12	107.9	2065
6411	15/07/2013 1.49pm	DNR	DNR	1627	DNR	DNR	1780	0.11	95.8	2460	0.11	101.7	2642
6412	18/07/2013 1:41pm	1.14	103.9	858	0.3	106.3	1721	0.37	90.8	3056	0.67	100.9	2077

BLAST RESULTS 2013

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		Blast Monitor Location											
		Elliot's Residence			McNaughton's Residence			Mt Vincent Rd Residence			Richards Residence		
Shot No.	Date & Time	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance
6413	23/07/2013 1.10pm	0.76	103.2	1276	0.27	106	1840	0.31	90.4	2617	0.66	95.5	2154
6414	23/07/2013 1.26pm	0.6	109.5	1032	0.27	108.3	1831	0.15	91.1	2880	0.35	103	1998
6415	25/07/2013 1.49pm	1.42	104.4	919	0.34	107.9	1618	0.28	95.1	2971	0.58	103.8	2219
6416	30/07/2013 12.43pm	1.87	104.9	927	0.38	102.5	1674	0.42	91.1	2965	0.44	98.9	2154
6417	30/07/2013 1.01pm	1.14	110	931	0.54	113.6	1784	0.27	100.1	2988	0.92	102	2021
6418	1/08/2013 12.01pm	DNR	DNR	1017	DNR	DNR	1797	0.09	99.5	2886	0.15	108.8	2036
6419	1/08/2013 1.46pm	DNR	DNR	1617	DNR	DNR	1923	0.07	87.1	2354	0.07	90.7	2415
6420	7/08/2013 11.02am	0.69	107.4	939	0.22	104.7	1655	0.3	93.9	2952	0.56	106.2	2181
6421	7/08/2013 11.19am	2.9	115	868	0.57	112.5	1858	0.44	99.9	3130	1.59	106.4	1931
6422	15/08/2013 12.52pm	1.16	115.6	1087	0.7	118.2	1738	0.82	103.4	2803	1.48	105.9	2153
6423	15/08/2013 1.17pm	1.56	105.3	1011	0.81	108.6	1974	0.27	85.3	3007	0.94	106	1817
6424	21/08/2013 1.03pm	1.71	115.9	914	0.51	104.6	1925	0.27	91.7	3124	0.62	100.8	1865
6425	21/08/2013 1.29pm	0.325	106.1	1981	0.497	108.2	2103	0.34	97.8	2133	0.46	96.3	2682
6426	27/08/2013 12.36pm	1.04	109.9	1210	0.389	108.6	1775	0.66	94.7	2686	1.15	97.7	2191
6427	02/09/2013 1.22pm	0.47	101.9	1895	0.4	103.3	2023	0.3	105.5	2212	0.37	103.7	2669
6428	03/09/2013 2.09pm	0.52	104	1054	0.71	103.9	1722	0.36	92.9	2836	0.82	109.1	2154
6429	04/09/2013 12.30pm	0.4	107.4	1895	0.33	110.7	2075	0.32	97.8	2161	0.29	98.2	2586
6430	05/09/2013 11.30pm	0.61	104.8	1882	0.5	105.1	2097	0.28	94.5	2143	0.28	95.8	2529
6431	12/09/2013 10.40am	0.5	102.1	1802	0.78	106.3	1833	0.34	96.5	2408	0.42	95.1	2814
6432	12/09/2013 1.07pm	0.21	98.3	1817	0.2	104.5	2002	0.19	93.2	2236	0.16	94.1	2580
6433	13/09/2013 10.11am	0.72	100.5	1756	0.89	106.9	1809	0.26	99.4	2427	0.29	94.7	2780
6434	25/09/2013 11.06am	DNR	DNR	780	DNR	DNR	1678	0.08	105	3136	0.12	101.1	2113
6435	27/09/2013 9.55am	0.47	108	1286	0.854	104.1	1594	0.34	88.2	2709	0.52	93.9	2507
6436	27/09/2013 10.10am	DNR	DNR	816	DNR	DNR	1661	0.08	105.9	3087	0.14	103.7	2136
6437	2/10/2013 11.13am	0.86	103.5	1421	0.83	104.6	1753	0.25	92.7	2548	0.27	95.1	2429
6438	4/10/2013 10.43am	0.42	103.2	1680	0.3	103	1923	0.23	100	2330	0.41	98.9	2501
6439	8/10/2013 10.56am	0.39	101.1	1480	0.4	104	1781	0.22	98.7	2503	0.34	97.6	2456
6440	9/10/2013 1.45pm	0.3	101.9	1716	0.33	104.5	1804	0.3	93	2431	0.32	96	2730
6441	11/10/2013 9.57am	0.6	102.9	1542	0.56	100.1	1808	0.32	99.1	2459	0.46	103.8	2491
6442	15/10/2013 10.57am	0.39	102.2	1664	0.36	106.8	1871	0.22	93.9	2375	0.29	96.8	2558
6443	18/10/2013 10.22am	0.4	99.6	1673	0.33	103	1863	0.27	99.2	2380	0.29	106.8	2583
6444	25/10/2013 10.17am	0.31	106.7	1245	0.17	107	1782	0.26	96.5	2654	0.38	97.2	2211
6445	25/10/2013 1.09pm	0.31	104.8	1976	0.33	102	2102	0.22	98.5	2135	0.21	96.3	2676

BLAST RESULTS 2013

EPL No. 396
Licencee: Bloomfield Collieries Pty Ltd
Premises: Bloomfield Colliery
Four Mile Creek Rd
Astonfield NSW 2323

Monitoring Frequency: Every blast
Airblast Overpressure Limit: 120 dB(Lin Peak)
Ground Vibration Limit: 10 mm/s

		Blast Monitor Location											
		Elliot's Residence			McNaughton's Residence			Mt Vincent Rd Residence			Richards Residence		
Shot No.	Date & Time	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance	Vibration (mm/s)	Airblast (dB)	Distance
6446	30/10/2013 10.58am	0.27	95.7	1927	0.28	94.7	2059	0.2	99.5	2176	0.16	92.2	2664
6447	31/10/2013 10.46am	DNR	DNR	1923	DNR	DNR	2103	0.15	88.5	2260	0.07	93.1	2582
6448	1/11/2013 9.49am	0.39	95.7	1770	0.42	98.5	1983	0.23	95.4	2393	0.11	94.7	2517
6449	5/11/2013 12.30pm	0.3	99.3	1864	0.5	100.5	1974	0.16	99	2382	0.11	95.7	2680
6450	6/11/2013 1.50pm	DNR	DNR	1810	DNR	DNR	1970	0.11	94.8	2393	0.16	101.2	2600
6451	7/11/2013 9.54am	0.3	106.9	970	0.3	107.7	1651	0.08	91.7	3083	0.13	92.3	2081
6452	14/11/2013 1.33pm	0.64	109.3	1095	0.24	114.8	1831	0.12	93.8	2803	0.27	98.5	2032
6453	15/11/2013 10.42am	3.73	103.5	778	0.61	99.4	1666	0.41	95.2	3134	0.55	103.5	2125
6454	25/11/2013 10.49am	0.35	114.8	905	0.15	112.3	1652	0.1	98.1	3304	0.18	104.5	2040
6455	25/11/2013 1.14pm	DNR	DNR	792	DNR	DNR	1693	0.41	108.1	3298	0.47	108.1	1942
6456	5/12/2013 9.27am	0.35	106.4	1782	0.32	104.4	1834	0.13	101.3	2403	0.16	100.4	2782
6457	9/12/2013 10.04am	DNR	DNR	1771	DNR	DNR	1986	0.05	96.9	2257	0.04	94	2535
6458	10/12/2013 9.43am	DNR	DNR	1773	DNR	DNR	2002	0.03	97	2378	0.05	95.5	2398
6459	12/12/2013 10.13am	DNR	DNR	1790	DNR	DNR	2001	0.12	96.5	2373	0.06	102.9	2520
6460	18/12/2013 11.45am	1.82	102.6	1094	0.5	102	1810	0.28	103.2	2967	0.45	105.7	1951

DNR - Did not register. Blast too small to trigger monitor.
* Logger failure

APPENDIX D

QUARTERLY NOISE MONITORING RESULTS

March 2013 Quarter Results

Location	Estimated Bloomfield LAeq(15minute) Contribution			Consent Conditions LAeq(15 minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
F – Black Hill Road, Black Hill	<40[1,2]	<34[1,2]	<38[1,2]	35	35	35	N/A[1,2]	Yes[1,2]	N/A[1,2]
G – Buchanan Road, Buchanan	33	34	36	39	42	37	Yes	Yes	Yes
L – Kilshanny Ave, Ashtonfield	<30[1,2]	<47[1,2]	<31[1,2]	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
M – John Renshaw Drive, Buttai	<37[1,2]	<37[1,2]	<33[1,2]	39	39	37	Yes[1,2]	Yes[1,2]	Yes[1,2]
N – Lings Road, Buttai	<43[1,2]	<42[1,2]	<40[1,2]	42	42	35	N/A[1,2]	Yes[1,2]	N/A[1,2]

1 - Bloomfield operations inaudible/not measureable
2 - Estimated contribution equals LA90 minus 10 dBA

June 2013 Quarter Results

Location	Estimated Bloomfield LAeq(15minute) Contribution			Consent Conditions LAeq(15 minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
F – Black Hill Road, Black Hill	<43[4]	<32[1,2]	<30[1,2]	35	35	35	N/A[4]		
G – Buchanan Road, Buchanan	<30[1,2]	36	<30[1,2]	39	42	37	Yes[1,2]	Yes	Yes[1,2]
L – Kilshanny Ave, Ashtonfield	<32[1,2]	<30[1,2]	<30[1,2]	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
M – John Renshaw Drive, Buttai	47	41[3]	<30	39	39	37	No	Yes[3]	Yes[1,2]
N – Lings Road, Buttai	36	<39[1,2]	<40[1,2]	42	42	35	Yes	Yes[1,2]	N/A[1,2]

1 - Bloomfield operations inaudible
2 - Estimated contribution equals LA90 minus 10 dBA
3 - Within 2 dBA tolerance as per Chapter 11 of NSW INP
4 – Mine owned property

September 2013 Quarter Results

Location	Estimated Bloomfield LAeq(15minute) Contribution			Consent Conditions LAeq(15 minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
F – Black Hill Road, Black Hill	<35[1,2]	<39[4]	<31[1,2]	35	35	35	Yes[1,2]	N/A[4]	Yes[1,2]
G – Buchanan Road, Buchanan	38	<30[1,2]	<30[1,2]	39	42	37	Yes[1,2]	Yes[1,2]	Yes[1,2]
L – Kilshanny Ave, Ashtonfield	<30[1,2]	<30[1,2]	<30[1,2]	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
M – John Renshaw Drive, Buttai	<30[1,2]	35	<30	39	39	37	Yes[1,2]	Yes[3]	Yes[1,2]
N – Lings Road, Buttai	<31[1,2]	41	<30	42	42	35	Yes	Yes[1,2]	Yes[1,2]

1 - Bloomfield operations inaudible
2 - Estimated contribution equals LA90 minus 10 dBA
3 - Within 2 dBA tolerance as per Chapter 11 of NSW INP
4 - Mine owned property

December 2013 Quarter Results

Location	Estimated Bloomfield LAeq(15minute) Contribution			Consent Conditions LAeq(15 minute)			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
F – Black Hill Road, Black Hill	<35[1,2]	<33[1,2]	33	35	35	35	N/A[4]	N/A[4]	N/A[4]
G – Buchanan Road, Buchanan	<37	<30[1,2]	<30[1,2]	39	42	37	Yes[1,2]	Yes[1,2]	Yes[1,2]
L – Kilshanny Ave, Ashtonfield	<30[1,2]	<36[1,2]	<30[1,2]	35	35	35	Yes[1,2]	Yes[1,2]	Yes[1,2]
M – John Renshaw Drive, Buttai	<30[1,2]	31	<30	39	39	37	Yes[1,2]	Yes	Yes
N – Lings Road, Buttai	<36[1,2]	<31	<34	42	42	35	Yes	Yes[1,2]	Yes[1,2]

1 - Bloomfield operations inaudible
2 - Estimated contribution equals LA90 minus 10 dBA
3 - Within 2 dBA tolerance as per Chapter 11 of NSW INP
4 - Mine owned property