DONALDSON COAL ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

As prescribed by Donaldson Coal Development Consent (114 –116) and the Mining Act 1992.

DONALDSON COAL MINE

Reporting Period:

1st November 2007 to 31st October 2008

Name of mine:	*Donaldson Coal Mine.*
Mining Titles/Leases:	*Mining Lease 1461*
MOP Commencement Date	*1st June 2006*
MOP Completion date (nominal)	*1st June 2012*
Name of leaseholder:	*Donaldson Coal Pty Ltd*
Name of mine operator (if different):	*Donaldson Coal Pty Ltd*
Reporting Officer:	*Mr Phillip Brown*
Title:	*Environmental Manager*
Signature	.....
Date	/ /

DONALDSON COAL MINE

Annual Environmental Management Report (AEMR) 2007-2008

Prepared by:

Phillip Brown - Environmental Manager
Donaldson Coal Pty Ltd

Authorised by:	Doug Gordon (General Manager, Operations)
Signature:	
Distributed to:	
Location:	

C O N T E N T S

APPENDICES

i PURPOSE OF THE REPORT

Donaldson Coal Pty Ltd. (Donaldson) has prepared this report to fulfill the reporting requirements of the Donaldson Mine Development Consent, condition 114.

This report was also completed to satisfy the annual reporting requirements of the Department of Primary Industries, Mineral Resources (MR) and as such was prepared in accordance with the *Environmental Management Guidelines for Industry – Guidelines to the mining, rehabilitation and Environmental Management Process* [1] (Version 3 dated January 2006).

This report provides a detailed review of the site environmental management over the annual reporting period 1st November 2007 to 31st October 2008.

ii DONALDSON COAL ENVIRONMENTAL POLICY

Donaldson is managed in accordance with an Environmental Management System (EMS) based on a recognised international standard (ISO 14001). In accordance with this standard, Donaldson has adopted an Environmental Policy. The policy details the commitment made by Donaldson to ensure that a high standard of environmental care is met. A copy of the policy is attached as **Appendix 1** of this report.

[1] NSW DPI (2006) ***Guidelines to the Mining, Rehabilitation and Environmental Management Process,*** EDG03, Version 3 (dated January 2006).

1 INTRODUCTION AND GENERAL INFORMATION.

1.1 DEVELOPMENT – OVERVIEW.

The Donaldson open cut mine is located 23km from the Port of Newcastle, north of John Renshaw Drive and west of Weakleys Drive. The mining lease is contained within the Cessnock and Maitland Local government areas. An aerial photograph showing the location of the mine in a regional context is attached as **Appendix 2** of this report.

Donaldson Coal Mine commenced operation on 25th January 2001, following approval by the then Minister of Urban Affairs and Planning (now known as the Department of Infrastructure, Planning and Natural Resources, DIPNR) in 1999. Mining is undertaken by way of truck and shovel mining techniques. During the first twelve months of the operation, the bulk of the overburden material was placed in an out of pit emplacement, 1.5km south west of the active pit. This was undertaken to allow sufficient opening up of the pit to expose the various coal seams. Since March 2002, the majority of the overburden material has been dumped in pit, backfilling the void once the coal has been mined out. Reshaping of the backfill to a landform commensurate to the existing topography commenced in September 2002.

The first load of coal was railed from Donaldson on the 26th March 2001. Up to 31st October 2007, approximately 9,855,746 tonnes of coal has been railed to both Hunter Valley power stations and international customers, through the Port of Newcastle. Mining is currently conducted under long term contract with Cooks Construction Pty Ltd (Cooks). All mining and associated operations are undertaken in accordance with the Development Consent, Environment Protection Licence and other statutory instruments as issued by the various government agencies.

1.2 CONSENTS, LEASE AND LICENCES

Table 1 provides a current list of statutory instruments in effect, including the date of grant of all leases, subleases, consents, approval or licenses. It also includes information relating to the current Mining Operations Plan (MOP). Details of any amendments to the MOP since the last AEMR are described in section 1.2.1 below.

TABLE 1: LIST OF CURRENT CONSENTS, LEASE AND LICENCES

Instrument	Date of Issue	Date of Expiration	Comments
Mining Lease (No. 1461)	22/12/1999	22/12/2020	• A copy of the mining lease is available for review at the Donaldson Coal office.
Mining Operations Plan	1/06/2006	1/06/2012	• Amended MOP was approved by MR for the period 1 June 2002 to 1 June 2006. • Current MOP submitted in June 2006 to cover the period to 2012. • Minor amendment requested in August 2007.
Development Consent	14/10/99	March 2011	• A copy of the Development Consent is available for review at the Donaldson Coal office. • Valid for 11 years after the commencement of mining. • Certain conditions of the Consent will continue to operate after the Consent for mining operations has lapsed.
Environment Protection Licence (No. 11080).	13/09/2000	Valid until cancelled.	• Licence was reviewed in June 2004. • Latest Annual Return submitted to the Department of Environment and Climate Change on the 7th November 2007.
Water Works Licence (No. 20SL060534)	19/02/2001		• The licence covers earthworks associated with the construction of clean water diversion around the mining operation and out of pit emplacement.
Bore Licence (No. 20BL168123)	12/11/2001		• Issued to cover groundwater extraction as a result of the active mining area.
Bore Licence (No. 20BL168124)	12/11/2002		• The licence has been issued to cover the five test bores established to cover groundwater monitoring at the mine. It also incorporates the thirteen bores established as part of the EIS groundwater investigation.

1.2.1 Amendments to the Mining Operations Plan (MOP)

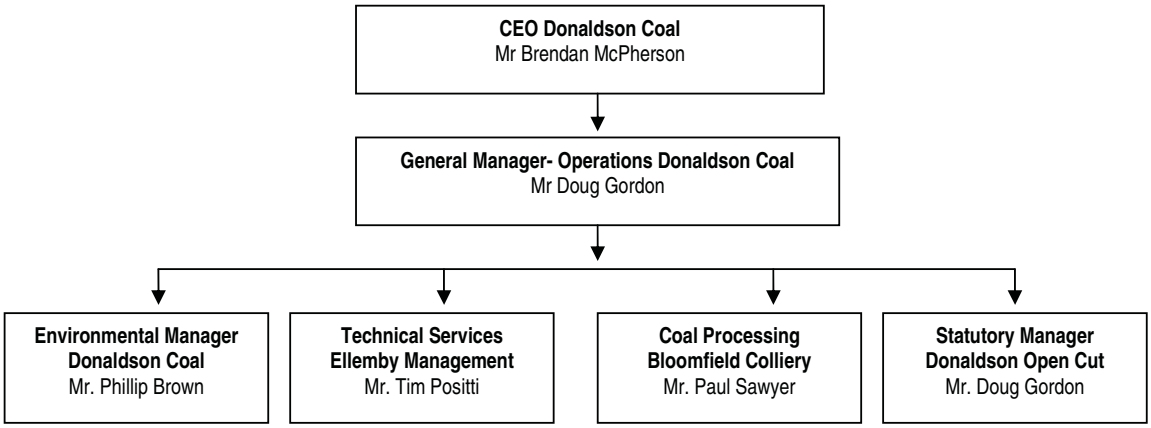
Development Consent and a mining lease have been granted to Donaldson Coal Pty Ltd to mine coal for a period of eleven (11) years. The initial Mining Operations Plan (MOP) covered a period of twelve (12) months of mining activity and was submitted to MR in September 2000 to enable operations to commence in January 2001.

An amended MOP and associated plans were submitted to MR to cover the period January 2002 through to June 2006. A subsequent MOP was submitted to MR in June 2006 to cover the remaining life of mine. This MOP also covers the relocation of the Hunter Water Board pipeline. This current MOP was issued on 1 June 2006 and expires on 1 June 2012. A minor amendment to the current MOP was requested in August 2007 and was approved.

1.3 MINE CONTACTS

Donaldson Coal Pty Ltd owns the mining operation and is the holder of the current mining lease. Cook's currently conducts the mining under long term contract. Cooks are responsible for all aspects of the mining at Donaldson Coal and are required to make appropriate appointments to fulfil the requirements of all statutory positions.

The following basic organisational chart shows the site personnel responsible for the various aspects of the operation.



The following contacts have been provided for the General Manager - Operations and the Environmental Manager:

Donaldson Coal Mine
1132 John Renshaw Drive
BLACKHILL NSW 2322

PO Box 2275
GREENHILLS NSW 2323

Phone: (02) 49342798 Community Hotline (24hrs): 1800 111 271
Fax: (02) 49342736
e-mail: donaldson@doncoal.com.au
Internet: www.doncoal.com.au

1.4 ACTIONS REQUIRED AT PREVIOUS AEMR REVIEW

An officer of MR conducted an annual environmental inspection at Donaldson Coal Mine on the 12/10/07. The purpose of the inspection was to investigate compliance with the environmental requirements and various relevant approval instruments, including the mining lease, MOP and the AEMR. There were no outstanding actions required by MR from the inspection.

2 OPERATIONS DURING THE REPORTING PERIOD

The following section briefly describes the general operation at the Donaldson Coal mine during the AEMR reporting period 1st November 2007 – 31st October 2008.

2.1 EXPLORATION

There was no exploration undertaken during this reporting period.

There is no exploration planned at Donaldson during the next AEMR reporting period.

2.2 LAND PREPARATION

The Donaldson mine site is characterised by native woodland and forest communities. A detailed description is included in the Flora and Fauna Management Plan (Gunninah, 2000; pp6). Although previously disturbed by activities such as logging, deliberate bushfires and recreational pursuits (eg. motorbikes, etc), careful treatment is planned to minimise disturbance and its impact in preparation for mining activities.

All works undertaken during the reporting period have been undertaken in accordance with the commitments made in the MOP. This has included the following:

- The survey and marking of areas to be cleared ahead of the mining operations;
- Minimising cleared areas to only those needed specifically for mining activities;
- Undertaking pre-clearing surveys to assess the presence of rare and endangered flora and fauna species, as well as to mark potential habitat trees to be retained and stockpiled for further use in the rehabilitated areas;
- Archaeological surveys with the local Mindaribba Lands council both before clearing operations and during topsoil stripping;
- The assessment and recovery of all useable timber resources for fence posts, firewood and poles ahead of the clearing operations. To date broad scale mulching of the waste timber has not been considered an economical option and therefore any timber not salvaged as part of the timber recovery operations is windrowed and buried in the pit as required.;
- Seed collection (where appropriate);

All topsoil ahead of the operation has been stripped and either taken to stockpile or direct spread over reshaped areas. Wherever possible, stockpiles are managed in accordance with the Erosion and Sediment Control Plan (Global Soils, 2000). There have been some occasions where stockpile heights have exceeded the maximum height of three (3) metres due to space limitations and not wanting to clear additional areas outside of the mining footprint. Where this has occurred, these topsoil stockpiles will be the first to be used once areas become available for direct spreading.

Water management and sediment control structures are in place in accordance with the requirements of the Water Management Plan (Perrens, 2000) and the Erosion and Sediment Control Plan.

To date visual screening has not been needed as the current working areas are protected by naturally occurring topographical features. Care is taken to position lighting towers on the in pit dumps to make sure they are pointed away from the residential areas when working at night.

2.3 CONSTRUCTION

There were no buildings constructed during the reporting period.

2.4 MINING

The planned mine capacity is based upon the removal of 7.0Mbcm of waste and 2.5Mtonnes of ROM coal each year, on a current roster of 2 x 8 hour shifts per day, five days per week plus the option of one (1) shift on Saturdays. Occasional periods of night shift operations (on a five-day basis) may also be required for coal preparation, or may be used to make up for lost production during wet periods. Maintenance will generally be performed on the "back" shifts. Working hours are typically between 6:00am to 11:30pm even though 24 hour operations are permitted under the consent.

The mining method employed is a "terrace mining" approach, with 75m strips oriented both perpendicular to, and along the strike. This arrangement provides the following advantages:

- Multiple seam plies are available simultaneously for blending purposes;
- Backfill void can be accessed quickly, thereby minimising out-of-pit dumping; and
- Haul distances to the backfill are minimised.

The thin nature of the seams and interburdens provides opportunities for efficient mining techniques including dozer push (to final position). **Table 2** shows the production and waste summary for this AEMR reporting period.

TABLE 2: PRODUCTION & WASTE SUMMARY

	Cumulative Production (cubic metres)		
	Start of Reporting Period	At end of Reporting Period	End of next reporting (estimated)
Topsoil stripped	320,848	341,692	
Topsoil used/spread	44,500	74,785	
Waste Rock	27,353,614	32,878,724	
Coal (ROM)	8,939,946	10,228,127	
Processing Waste	2,436,735	3,460,758	
Product Coal (tonnes)	6,503,211	7,338,004	

The total amount of waste rock moved in the AEMR period was 5,525,110 cubic meters.

2.5 MINERAL PROCESSING

Bloomfield Colliery is currently contracted to wash, stockpile and load all coal mined at the Donaldson Mine. All coal is transported from Donaldson in road registered coal haulage trucks. Loads are limited to a maximum of 40t. Once passed through the Bloomfield Coal Handling and Preparation Plant (CHPP), the coal is transported to the dump hopper at the conveyor head by one of two methods:

- Loader and Trucks;
- By direct reclaim.

The conveyor takes the coal from the CHPP area to a rail load out bin and manual loading facility. All Donaldson Coal is then transported from Bloomfield to the port or power stations by train using the existing Bloomfield rail loop. This is consistent with the current MOP as approved by MR.

2.5.1 Plant Throughput and Saleable Production

Table 3 shows the monthly treatment plant throughput and the saleable production for each month during the reporting period.

TABLE 3: PLANT THROUGHPUT AND SALEABLE PRODUCT.

(tonnes)	Nov 2007	Dec 2007	Jan 2008	Feb 2008	Mar 2008	Apr 2008
Plant Feed	275879	160492	173207	284305	219395	178459
Washed Coal	177709	105110	105976	186391	141619	124288
Sizing	0	0	0	0	0	0

(tonnes)	May 2008	June 2008	July 2008	Aug 2008	Sep 2008	Oct 2008
Plant Feed	244264	149117	145482	227523	154951	216201
Washed Coal	161744	103806	98426	135017	73375	178521
Sizing	0	0	0	0	0	0

Totals for the reporting period were:

(tonnes)	TOTAL
Plant Feed	2964836
Washed Coal	1940813
Sizing	0

2.6 WASTE MANAGEMENT

The following section briefly outlines the waste management systems employed at the Donaldson Coal Mine. All waste is managed in accordance with the Waste Management Plan (Global 2000b).

2.6.1 Tailings and Rejects

Bloomfields Colliery, as part of the contract discussed above, manages all process waste. Both tailings and coarse rejects are disposed of on site at Bloomfields in accordance with their own management plans. This is consistent with the current MOP as approved by MR.

2.6.2 Sewerage Treatment/Disposal

Currently there are three (3) locations where sewerage is collected and managed. This includes the following areas:

- Cooks Construction administration and bathhouse
- Cooks Construction in-pit crib hut facilities; and
- Donaldson administration facility.

Individual Bio-cycle units services all three (3) areas with the treated water being used to irrigate the gardens and lawn/bushland around the offices. The bio-cycle units are serviced quarterly in accordance with the service schedule recommended by the supplier.

2.6.3 Fuel Containment

A permanent bulk fuel farm facility has been constructed on site in accordance with the appropriate standards. The area is contained by an earthen bund. Approximately 100,000L of diesel fuel is stored on site at any one time. Cooks Construction is responsible for the management of the Fuel Farm facility.

2.6.4 Oil and Grease Containment and Disposal

Oil and grease is delivered to site in 205L drums. A bunded storage pad is used to store full 205L drums. All waste oil collected during servicing is stored in a 5000L-storage tank and routinely collected for recycling. Empty drums are stockpiled inside earthen bunds and collected by a licensed drum recycler on a regular basis.

Oily water is treated by way of an oil-water separator or collected and disposed of by a licensed waste disposal contractor.

2.6.5 Rubbish Disposal

A licensed contractor collects all general rubbish and disposes of it off site at an approved waste facility.

2.6.6 Additional Waste Streams

Table 4 shows the other minor waste streams identified at the Donaldson Mine including the current mode of disposal and treatment as required.

TABLE 4: MINOR WASTE TYPES AND THE MODE OF DISPOSAL/TREATMENT

WASTE TYPE	Method of Disposal or Treatment
Green Waste	Trees are removed for posts, poles, rails and woodchip. Those trees not used are windrowed and buried in the pit ahead of backfilling.
Oil Filters	Oil filters are drained and placed in 205L drums for recycling by a licensed waste disposal contractor.
Redundant Chemicals	Redundant chemicals are taken out of operation, labelled and disposed of by a licensed waste disposal contractor.
Batteries	Batteries are stockpiled on pallets and taken by licensed waste disposal contractors for recycling.
Tyres	All tyres are used on site as bunds and bollards, or are disposed of in the active dump. The Cooks maintenance manager keeps a list of all tyres disposed of in the backfill.
Scrap Metal	All scrap metal is collected in designated skips and recycled by a licensed scrap metal recycler.
Coolant	Coolant is collected in designated drums and disposed of by a licensed waste disposal contractor
Contaminated Soil	All contaminated soil from spills and accidents is taken to a designated area that is bunded. When a sufficient volume of soil is present it is bio-remediated using land-farming techniques.
Parts Wash Degreasers	Parts washers are collected by a licensed waste disposal contractor and recycled and returned to the site for reuse.

2.7 PRODUCT STOCKPILES

Both the main run of mine (ROM) and product stockpiles are located adjacent to the Bloomfields CHPP and as such are specifically managed by Bloomfields. **Table 5** shows the washed and sizing stockpile capacities allocate to Donaldson Coal at Bloomfields.

TABLE 5: STOCKPILE CAPACITY (ROM & SALEABLE COAL).

(tonnes)	ROM	Product
Sizing Coal	10,000	25,000
Washed Coal	20,000	40,000

Donaldson has established two (2) primary ROM coal stockpiles on the Donaldson mine site itself. These stockpiles are used during wet weather or when the Bloomfield's ROM stockpiles are full. The first is located part the way along the coal haul road adjacent to the Cooks Construction workshop (1.2km from pit), while the second is located on the out of pit dump (1.6km from pit). On some occasions in-pit ROM coal stockpiles are established in order to allow sequential mining to proceed when there are delays due to weather or insufficient stockpiling room at Bloomfield's.

2.8 WATER MANAGEMENT

The following section details the water management structures constructed during the reporting period as well as other changes that have been made to water management at the mine. It also includes a brief summary of the water balance records. Information on the water monitoring program and a summary of results is included in section 3.2.3, 3.2.4 and 3.2.5 of this report.

2.8.1 Water Storage Structures

A 400 ML mine water dam was constructed in 2004. This dam is used to store mine water from the pit and is reused for dust suppression.

The 18 ML dam was increased in storage to 40 ML in 2004. This is used for collection of run-off water from rehabilitated areas.

2.8.2 Sediment Control Structures

Work was undertaken to refine the drainage of the hard stand area to the industrial dam. This area then drains to the large mine water storage dam.

The sediment dams alongside the coal haul road have been upgraded and the capacities increased. Maintenance is undertaken on a regular basis to remove sediment build up.

An additional sediment dam was constructed on the eastern boundary of the mine lease during the period.

2.8.3 Water Consumption/Balance.

The site Environmental Manager maintains a site water balance based on water consumed at the mine. It includes recording the amount of water that is available in various water holding structures around the mine. The following chart, **Figure 1**, shows the water consumption and site rainfall for the Donaldson Mine. All water for this monitoring period was obtained from site supplies.

FIGURE 1: WATER CONSUMPTION AND SITE RAINFALL

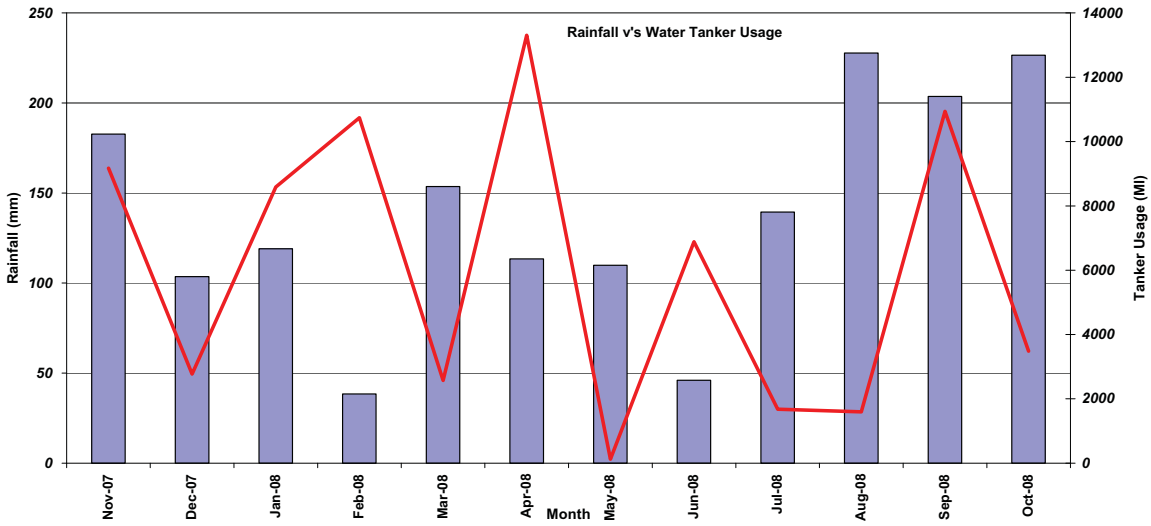


Table 6 shows the volume of water stored on site at the start and end of the reporting period. It also includes reference to the storage capacity available.

TABLE 6: STORED WATER

	Volumes held (cubic metres)		
	Start of Reporting Period	At end of Reporting Period	Storage Capacity
Dirty water	8	5	5
Contaminated water*	361	130	500+
Controlled discharge water** (salinity trading schemes)	NA	N/A	N/A

Note: *This data assumes that there is no water stored in the pit, where in reality there is generally always an in pit sump established down dip. The sump is capable of storing some water without

impacting on the mining operation. The water is used for in-pit dust suppression where it is accessible to the water cart.

**Donaldson Coal does not discharge water under the Hunter River Salinity Trading Scheme.

2.9 HAZARDOUS MATERIAL MANAGEMENT

As the operator of the Mine, Cooks Construction is principally responsible for the management of hazardous and explosive materials. Donaldson Coal has the occasional need to use chemicals (drilling muds, herbicides, etc). All hazardous materials are managed in accordance with the Cooks Construction Site Safety Management System.

2.9.1 Explosives

From 17th September 2008, Orica Quarry Services was contracted to provide blasting services to the mine. Previously blasting was conducted by Roche Sasol Blasting. Orica Quarry Services manages all explosives and other related materials in accordance with the appropriate legislation and industry standards. All explosives, etc are brought to site on an as needs basis, and as such a magazine (or similar) is not required at the site.

2.9.2 Bulk Fuel Storage

All bulk fuels are managed in accordance with the detail described in sections 2.6.3 of this report.

Cooks Construction has constructed a fuel farm facility to store 100,000L of diesel fuel. The fuel farm facility has been approved as a bulk storage facility for hazardous materials.

2.9.3 Chemicals

Both Cooks Construction and Donaldson Coal keep an up to date inventory of Material Data Safety Sheets (MSDS) for all chemical substances used on the site. Prior to a new substance being introduced on the site it has to be approved by the Statutory Mine Manager and is included on the site register.

In addition, copies of Material Data Safety Sheets (MSDS) are generally kept with the chemical when it is being used on site, where this is not the case copies are kept in the on site chemical register.

3 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

The following section gives an overview of the environmental management performance of the Donaldson Coal Mine during the reporting period. It considers the main environmental aspects of the operation and summarises environmental performance, providing explanation or interpretation for any exceedances. It also considers the adequacy of the control strategies and suggests ongoing improvements where required.

3.1 ENVIRONMENTAL MANAGEMENT STRATEGY (EMS)

During this reporting period work has continued to integrate the Donaldson Coal and Cooks Construction individual company EMS's into one working document for the mine site. A more effective and useable outcome will be achieved by combining the EMS's. The revised EMS has been developed in accordance with the ISO 14001 standard and the additional specific requirements of the Development Consent.

Ongoing workforce training and continuous improvement programs will be undertaken following the development of the revised EMS documentation. Donaldson will manage copies of the documentation however; Cooks will have access to both digital and hard copies of the EMS.

The Flora and Fauna Management Plan, Blast Management Plan, Air Quality Management Plan and Noise Management Plan were all revised in accordance with the Development Consent during the 2007 AEMR period and approved by the Department of Planning.

3.1.1 Environmental Risk Assessment

Donaldson Coal previously undertook a detailed Environmental Risk Assessment as part of the recent EMS review. The aim was to identify which activities at the mine present the greatest risk to the environment. **Table 7** lists the principal environmental aspects identified during this process. An internal risk rating score has been assigned to each identified risk as part of a frequency, probability and severity analysis (FPSA). **Table 7** is in accordance with the requirements of the DPI guidelines (EDG03). Control strategies and detail on the environmental performance in all areas encompassing these aspects are included in **section 3.2**.

TABLE 7: SUMMARY OF ENVIRONMENTAL RISKS & CONTROL STRATEGIES.

Environmental Aspect	Potential Environmental Impact	Internal Rating
maintaining conservation areas	Fire	HIGH
overburden hauling & emplacement	Noise	HIGH
coal haulage & stockpiling	acid mine drainage	HIGH
active waste emplacement	acid mine drainage	HIGH
landform & vegetation rehabilitation	Fire	HIGH
blasting overburden	impact on 132kV powerlines	MODERATE
overburden hauling & emplacement	Dust	MODERATE
blasting overburden	noise (overpressure)	MODERATE
vegetation clearing	disturb or destroy endangered flora & fauna	MODERATE
hazardous Goods Storage	hydrocarbon, oil spill	MODERATE
excavation O/B & coal	Dust	MODERATE
maintaining conservation areas	land disturbance – unauthorised	MODERATE
coal haulage & stockpiling	Dust	MODERATE
Mobile fuel truck	Hydrocarbon spill from vehicle incident	MODERATE
stripping topsoil	disturb or destroy cultural heritage sites	MODERATE
blasting overburden	Vibration	MODERATE
excavation O/B & coal	Noise	MODERATE
water distribution/pumping	broken pipeline causing leakage/siphoning	MODERATE
coal processing & loader	Noise	MODERATE
timber recovery	disturb or destroy cultural heritage sites	MODERATE
blasting overburden	Dust	MODERATE
timber recovery	disturb or destroy endangered flora & fauna	MODERATE
stripping topsoil	Dust	MODERATE
excavation O/B & coal	hydrocarbon spill (burst hose)	MODERATE
overburden hauling & emplacement	hydrocarbon spill (burst hose)	MODERATE
H/W water storage's (above ground)	failure of dam wall (10 ML) resulting in rapid release	MODERATE
H/W water storage's (below ground)	seepage or overflow	MODERATE
servicing & Maintenance	hydrocarbon, oil spill	MODERATE
coal haulage & stockpiling	Noise	MODERATE
rejects & tailings emplacement	off-site water contamination	MODERATE
stripping topsoil	Noise	MODERATE
vegetation clearing	disturb or destroy cultural heritage sites	MODERATE
landform & vegetation rehabilitation	erosion of landform and release of sediment	MODERATE
waste Management	hydrocarbon, oil or chemical spill. Consumables etc	MODERATE
maintaining conservation areas	land contamination by rubbish	MODERATE
overburden hauling & emplacement	exhaust emissions	MODERATE
using water-cart for dust suppression	repeated application to road surfaces	MODERATE
involving water importing from Bloomfields	pipe burst and leakage of very saline water	MODERATE
active waste emplacement	Visual	MODERATE
exploration drilling	disturb or destroy cultural heritage sites	MODERATE
excavation O/B & coal	loss of topsoil	MODERATE
stripping topsoil	hydrocarbon spill from burst hose or re-fuelling	MODERATE
vegetation clearing	hydrocarbon spill from burst hose or re-fuelling	MODERATE
active waste emplacement	Dust	MODERATE
coal haulage & stockpiling	hydro-carbon spill from vehicle roll-over	MODERATE
coal processing & loader	Dust	MODERATE
coal processing & loader	washery water spill/leak. Impact on water quality	MODERATE
stripping topsoil	loss of topsoil (quantity)	MINOR
stripping topsoil	erosion and sediment discharge	MINOR

timber recovery	hydrocarbon spill from burst hose or re-fuelling	MINOR
exploration drilling	hydrocarbon spill from burst hose or re-fuelling	MINOR
stripping topsoil	loss of topsoil (quality)	MINOR
drilling overburden	Noise	MINOR
drilling overburden	Dust	MINOR
drilling overburden	hydrocarbon spill	MINOR
coal haulage & stockpiling	spontaneous combustion	MINOR
rejects & tailings emplacement	contaminated land	MINOR
Vehicle parts washing	hydrocarbon, oil spill (no fixed location)	MINOR
vegetation clearing	Noise	MINOR
exploration drilling	water quality (drilling mud, additives)	MINOR
vegetation clearing	Dust	MINOR
vegetation clearing	erosion and sediment discharge	MINOR
timber recovery	Noise	MINOR
timber recovery	Dust	MINOR
timber recovery	erosion and sediment discharge	MINOR
exploration drilling	Noise	MINOR
exploration drilling	Dust	MINOR
exploration drilling	erosion and sediment discharge	MINOR

3.2 ENVIRONMENTAL MANAGEMENT CONTROLS

This section documents the implementation and effectiveness of control strategies and environmental performance for a range of environmental aspects as prescribed by the MR guidelines. Summary tables of all monitoring data are included for consideration by the MR. Detailed copies of all environmental data collected by Donaldson have not been included in the present report but are however available upon request.

3.2.1 Meteorological Monitoring

An automatic weather station has been in operation at the site since 3rd December 1999. The station is supplied and serviced by Holmes Air Sciences. The station is a Unidata system with instrumentation installed to measure solar radiation (W/m^2), temperature (°C), wind speed (m/s), wind direction and rainfall (mm). Data from the Unidata station was recorded continuously and reported as ten-minute averages. In May 2001 the monitoring data was integrated with a Citect operating system to provide real time and meteorological data and trending functions. This feature has allowed operational staff the ability to make up-to-date decisions about the influence of meteorological conditions on mining operations. **Figure 2** shows a typical screen that is displayed both in the Donaldson Coal Communication's office and the Shift Foreman office.

The Meteorological station is planned for an upgrade in the 2009 AEMR reporting period

Rainfall

Table 8 details the rainfall for the 2008 AEMR reporting period. A total of 1,245.7 mm was recorded during the 2008 AEMR reporting period, more than the corresponding 2007 AEMR period (857.4 mm) and significantly higher than the historical average (894mm). **Table 8** also includes a comparison between the historical monthly average rainfall from the Bureau of Meteorology site at East Maitland (site 061034 – operating from 1902 to 1 Mar 1994) and the rainfall recorded at the Donaldson Weather Station since January 2000.

FIGURE 2: WEATHER STATION SCREEN.

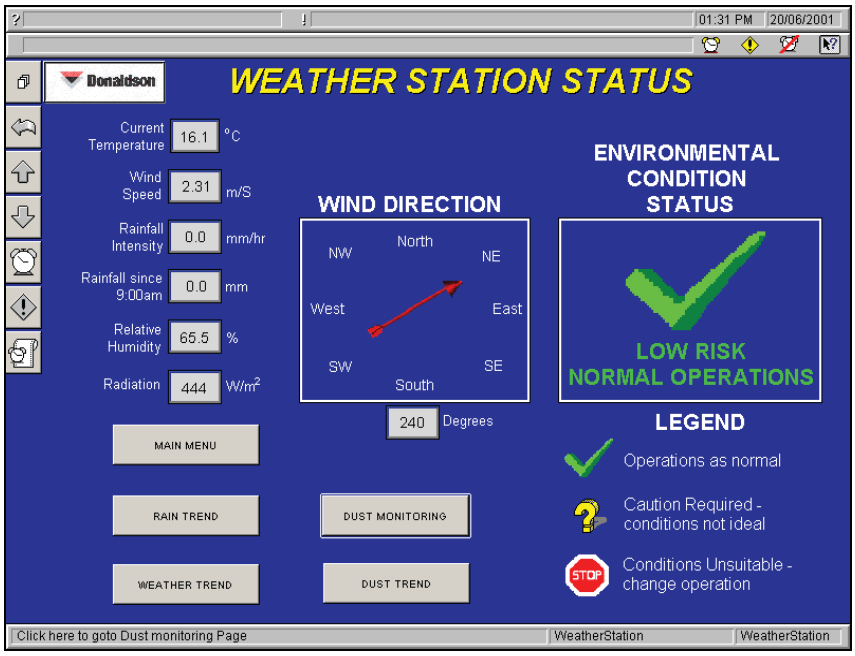


TABLE 8: COMPARISON BETWEEN MONTHLY RAINFALL DURING THE 2008 AEMR REPORTING PERIOD, PREVIOUS REPORTING PERIODS AND HISTORICAL AVERAGE.

Period	Average Monthly Rainfall (mm)												
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Historical Average (East Maitland)	89	94	97	87	70	84	58	52	55	66	62	81	894
2000	61	32	279	146	45	24	27	31	33	47	106	32	863
2001	46	169	193	114	244	3.4	63	22	12	31	91	38	1026.4
2002	48	281	184	66.4	62.1	30	30	21	17.4	18.8	56.2	149.2	964.1
2003	6	90	22.2	77	135	13.2	43	27.4	0	63.2	137.6	39	653.6
2004	86	176.6	80	33.6	17.4	9.4	15.4	43.1	61.2	136	77.4	69.8	805.9
2005	64.4	95.8	127.8	57.4	61.8*	56.8	7.2	0.8	37.0	84.0	22.8	9.6	625.4
2006	29.8	47.4	63.6	4.6	7.8	43.8	42.6	49.2	162.4	25.4	37.8	35.6	550.0
2007	13.4	88.0	102.0	86.0	60.0	301	17.0	79.6	19.8	17.2	**163.8**	**49.5**	997.3
2008	**153.4**	**191.75**	**46**	**237.6**	**2.2**	**122.9**	**30**	**28.5**	**195.3**	**62.2**	**73.3**		1143.15

Note: Bold results are for this monitoring period.
* Data set not complete

Wind Speed and Direction

Wind speed and direction data have been collected from the meteorological station at Donaldson Coal Mine since December 1999. These data are presented in the form of windrose charts. Windrose charts for each month and season within the 2008 AEMR reporting period are included in **Appendix 5**. A windrose chart for the entire 2008 AEMR reporting period is also included in **Appendix 5**.

The winds display a high degree of seasonality. Winds typically blow from the south to east quadrant from October to March and from the west to north quadrant from April to September.

3.2.2 Air Pollution

There are two principle sources of air pollution from the Donaldson Coal Mine. The first is airborne dust that comes from the mining activities (measured as depositional dust, PM_{10} and Total Suspended Particulates (TSP). The second source is from the combustion of diesel fuel, which is measured as $PM_{2.5}$ particles.

Donaldson operates the following dust monitoring equipment:

- one High Volume Air Sampler (HVAS) measuring TSP and
- two HVAS measuring PM_{10};
- two continuous DustTrak monitors measuring PM_{10};
- eleven Depositional Dust Gauges measuring insoluble solids; and
- one GRIMM monitor measuring PM_{10} and $PM_{2.5}$ on two campaign events.

Refer to **Appendix 2** for dust monitoring locations. It is noted that measurements taken at any of these locations will include all background air pollution relevant to those locations, as well as any contribution occurring from the Donaldson Coal Mine.

Control Strategy:

The reviewed Donaldson Air Quality Management Plan (Holmes, 2007) details the range of measures employed by Donaldson to control airborne dust. These measures include:

- Maintenance of an adequate distance between the mine and neighbouring residents;
- Minimisation of disturbance of land to only what is required by mining activities;
- Minimisation of the distance travelled by hauling overburden the shortest distance possible;
- Utilisation of mine water for dust suppression on roads, stockpiles and work areas; and
- Monitoring of real time weather conditions and alter or cease the offending operations when dust is becoming difficult to control.

Environmental Performance:

No dust complaints were made during the 2007 AEMR reporting period.

A review of the dust monitoring data for the period suggests that there has been no major change in the regional dust levels as a result of mining activities compared to the previous reporting period. Seasonal variations are evident (ie. summer versus winter) and in some cases high readings have been recorded on the DustTrak's and the Depositional Dust Gauges. These events are related to

activities adjacent to the monitoring site (other than mining) including, but not limited to, dirt roads, bushfires and lawn mowing.

A summary of the monitoring data for the reporting period is included here for reference.

Depositional Dust Gauges

Results were recorded for 132 monthly samples at eleven (11) dust gauges out of a possible total of 132. All results were obtained and all were judged to be valid, with acceptable levels of contamination from other sources including bird droppings, vegetation, refer **Table 9**.

All gauges were in compliance with the Donaldson Air Quality Management Plan, with annual average insoluble solid results for each gauge below the criteria of 4g/m^2.month. Results are displayed in **Table 10**. Results are generally similar or lower to the previous year's results and indicate no major increase in dust emissions.

TABLE 9: MISSING DEPOSITIONAL DUST GAUGE DATA.

Location	Date	Reason for exclusion
Nil	N/A	N/A

N/A = Not Applicable – all gauges were collected in the AEMR Reporting period.

TABLE 10: CONCENTRATION MONITORING - DEPOSITIONAL DUST GAUGES

Sample Site	No. Samples Required	No. samples collected and analysed	Maximum Insoluble Solids (g/m^2.month)	Minimum Insoluble Solids (g/m^2.month)	Mean Insoluble Solids (g/m^2.month)
DG1	12	12	4.5	0.2	1.2
DG2	12	12	5.0	0.1	1.1
DG3	12	12	14.0	0.1	3.1
DG4	12	12	1.4	<0.1	0.7
DG5A	12	12	2.9	<0.1	0.9
DG6	12	12	2.1	0.1	1.0
DG7	12	12	1.1	0.1	0.7
DG8	12	12	2.7	0.3	1.3
DG9	12	12	1.2	0.1	0.7
DG10	12	12	1.6	0.2	0.8
DG11	12	12	1.8	0.2	1.1

High Volume Air Samplers

This section deals with the high volume air samplers located at "Bartter Chicken Farms" site (now owned by the Catholic Diocese of Maitland and Newcastle) and the Beresfield Golf Course. Two sets of measurements have been performed during the reporting period, *viz*. PM_{10} (particulate matter of diameter less than 10 μm) and TSP (total suspended particulate matter). A summary of these measurements is included below.

PM_{10}

The annual average PM_{10} at both monitoring sites was below the annual average maximum criteria of 30ug/m^3. The annual average PM_{10} at the Beresfield Golf Course and at the "Bartter Enterprise" location has remained relatively stable compared to the previous 2007 AEMR reporting period. Results are displayed in **Table 11**.

During this AEMR reporting period, all PM_{10} measurements recorded at the "Bartter Enterprise" location satisfied the 24-hour NEPM maximum criteria of 50 $\mu g/m^3$. Only two (2) of the 24 hour PM_{10} measurements recorded at the Beresfield Golf Course location exceeded this criteria and this indicates similar air quality at both locations. The PM_{10} results exceeding the NEPM 24hr criteria at the Beresfield Golf Course was recorded on the 20 September 2008 (55 ug/m^3) and the 2 October 2008 (51 ug/m^3) . The predominant winds on these dates were NW-N.

The Beresfield Golf Course is located E to NE of current mining operations and any dust emissions from Donaldson Coal would have resulted in minimal impact under these wind conditions. The higher dust levels are most likely due to localised effects and have not been attributed to the mining activities of Donaldson Coal. Generally PM_{10} levels at both sites were similar during this monitoring period compared to the last monitoring period.

TABLE 11: DETAILS OF CONCENTRATION MONITORING (PM_{10} HIGH VOLUME AIR SAMPLERS).

Sample Site	No Samples Required	No samples collected and analysed	Maximum PM_{10} Value ($\mu g/m^3$)	Minimum PM_{10} Value ($\mu g/m^3$)	Mean PM_{10} Value ($\mu g/m^3$)
Beresfield Golf Course	61	61	56	4	21
"Bartter Enterprise"	61	61	41	1	10

Total Suspended Particulates

TSP measurements were performed at the "Bartter Enterprise" location, using a high volume air sampler. Details of these measurements are included in **Table 12**.

The annual average TSP result at "Bartter Enterprise"s (26 µg/m^3) was well below the annual average criteria of 90 µg/m^3. While there are no specified criteria for a 24-hr TSP maximum in the Donaldson consent or EPA licence, all TSP results were well below the US EPA short term good air quality criteria of 260 µg/m^3.

In general, the results recorded during this reporting period are similar to the corresponding measurements of the 2007 AEMR reporting period indicating a low dust impact from mining operations. The ratio of PM_{10} to TSP over the reporting period was 38%, which is a slightly lower ratio than the last reporting period results (49%) indicating less finer particulates in the Total Suspended Particulates..

TABLE 12: CONCENTRATION MONITORING (TSP HIGH VOLUME SAMPLERS).

Sample Site	No Samples Required	No samples collected and analysed	Maximum TSP Value (µg/m^3)	Minimum TSP Value (µg/m^3)	Mean TSP Value (µg/m^3)
"Bartter Enterprise"	61	61	88	3	26

Table 13 displays the data capture rate for the three high volume air sampler units during the period. All data from all scheduled run events was collected in the AEMR monitoring period.

TABLE 13: HIGH VOLUME SAMPLER DATA CAPTURE RATE.

Monitoring Location	Data Capture Rate (%)
Bartter (PM_{10})	100
Bartter (TSP)	100
Beresfield, Golf Course (PM_{10})	100

DustTrak Monitors

Donaldson operates two continuous DustTrak air quality monitors. One has been permanently located on a property owned and occupied by "Bartter Enterprise". The second unit is designed to be mobile and as such rotates to various key locations around the mine as required. The mobile DustTrak has been located on Weakleys Drive (east of the mine site) throughout the entire duration of this reporting period. This location is preferred as it is close to the mine and is located at the residence of one of the Community Consultative Committee (CCC) members. Both units are interrogated remotely from the mine by way of mobile phone telemetry. The results are logged and stored on the mine Environmental Monitoring computer system.

Table 14 summarises the DustTrak monitoring data and the data capture rate. The measurements of PM_{10} by optical methods (such as the DustTrak monitors) are known to be particularly sensitive to rainfall or high humidity events. Monthly inspections of the DustTrak monitors and regular servicing of the instruments assist with reducing occasions when the measurements become unstable or drift from sensible values. It was considered appropriate to exclude non-valid data from the calculations of the highest 24-hour average PM_{10}, annual average PM_{10} and the lowest 24-hour average PM_{10}. Despite this, the valid data recovery rate, refer **Table 14**, upon which the PM_{10} averages are based are still substantial.

In some instances the assessment of whether collected data was valid or not was difficult to determine. Obvious erroneous measurements included negative values, extremely high values persisting for extended periods of time (ie. continuously for days) and data, which exhibited no variation for, extended periods of time. Holmes Air Sciences determined data averaging and validity.

The monthly air quality monitoring reports provided to Donaldson Coal by Holmes Air Sciences provide graphs of all the data collected, including valid and non-valid data. Charts of all Dusttrak data in the AEMR monitoring period are provided in **Figures 3 and 4**.

TABLE 14: DETAILS OF DUSTTRAK CONTINUOUS MONITORING

Site	Data collection	Total data recovery (%)	Valid data recovery (%)	Highest 24-hour average PM_{10}	Annual average PM_{10}	Lowest 24-hour average PM_{10}
Weakleys Drive	Continuous	70.0%	61.5%	87.77	11.8	0.521
"Bartter Enterprise"	Continuous	32.8%	32.8%	44.215	12.37	1.299

Note: Data in this table is for the annual reporting period 1 November 2007 to 31 October 2008 as reported by Holmes Air Sciences.

The results from DustTrak monitoring are comparable to those obtained from the PM_{10} High Volume Air Sampling and the annual averages were again, below the maximum NEPM annual average criteria.

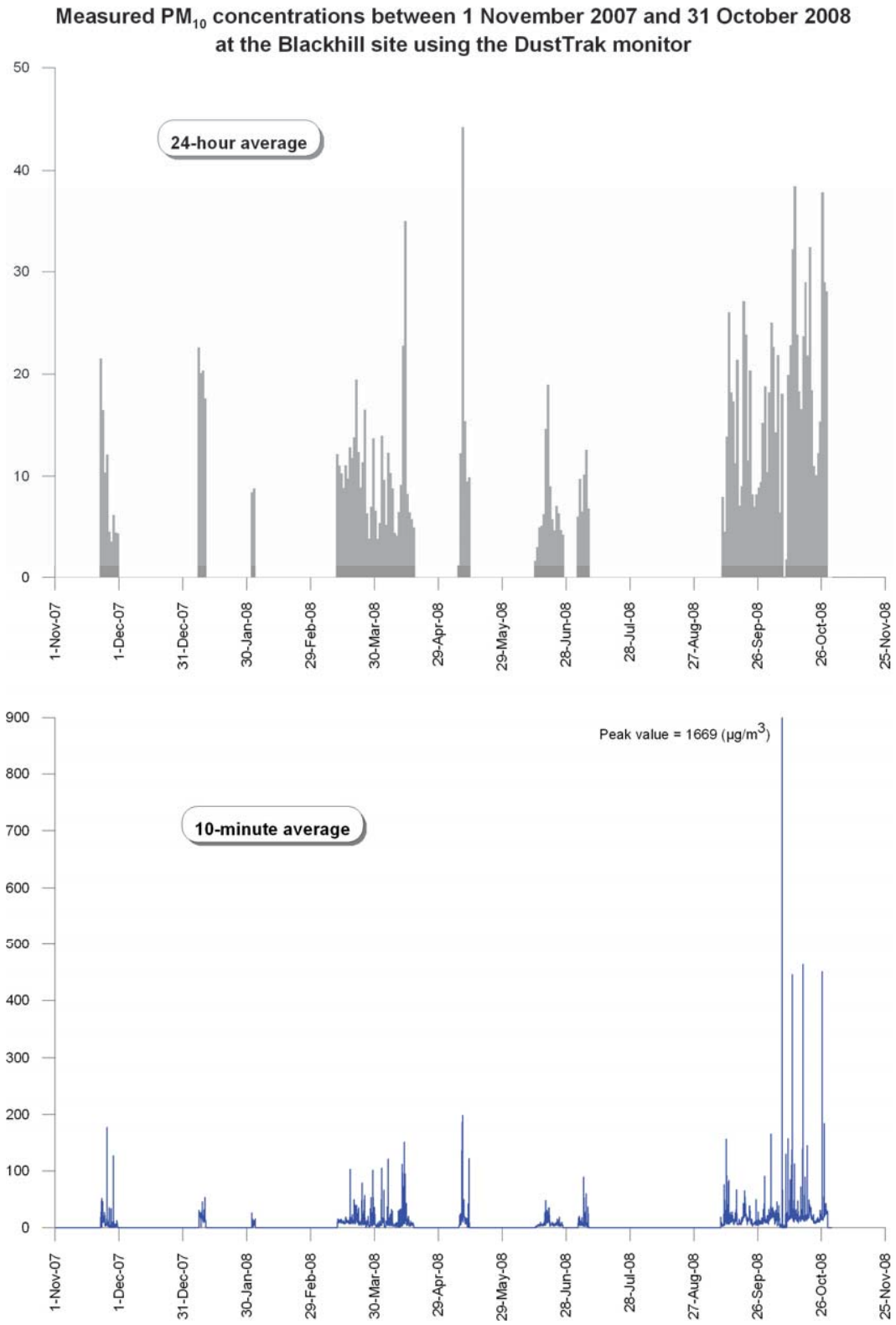


Figure 3: Dusttrak Monitoring 1 November 2007 to 31 October 2008 at the Blackhill Site

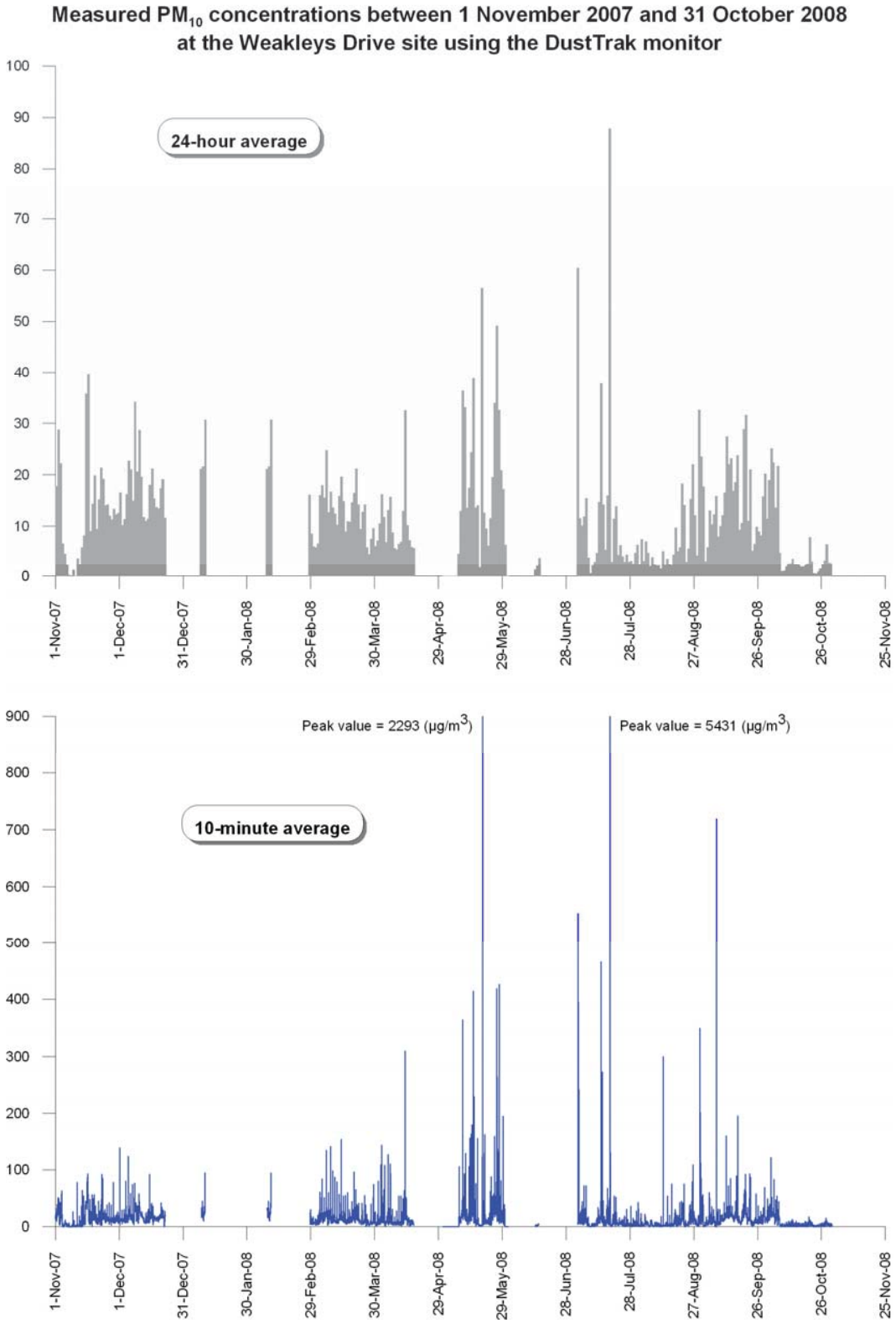


Figure 4: Dusttrak Monitoring 1 November 2007 to 31 October 2008 at the Weakleys Drive Site

$PM_{2.5}$ Air Quality Monitoring

$PM_{2.5}$ dust monitoring was undertaken by a GRIMM monitor for three campaign events during this reporting period at the Bartter (Blackhill) site. Monitoring was conducted continuously over the period 1st February to 5th February 2008, 2nd May to 8th May 2008 and the 18th September to 26th September 2008. 10-minute averages were obtained and are provided in **Figures 1, 2 and 3.**

Data collected during the February 2008, May 2008 and September 2008 sampling events showed that PM_{10} measured at the site consisted of approximately 24% to 37% $PM_{2.5}$ particles respectively. This is similar to previous recorded results and is a relatively low fraction. It is typical of a semi-rural area such as where the particulate matter is likely to be crustal (dust particles) rather than from the combustion process such as the burning of fuel in motor cars. There is however likely to be some contribution from motor cars due to the proximity of major roads to the monitoring location.

Figure 1: PM10 and PM2.5 chart for the period 1st February 2008 to 5th February 2008

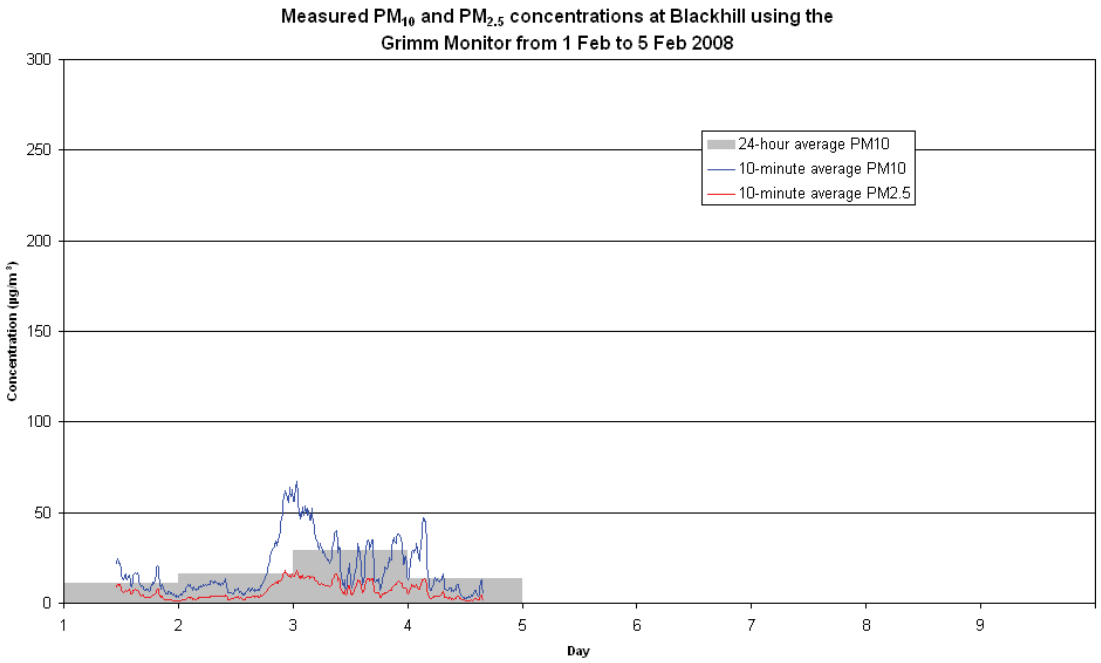


Figure 2: PM10 and PM2.5 chart for the period 2nd May 2008 to 8th May 2008

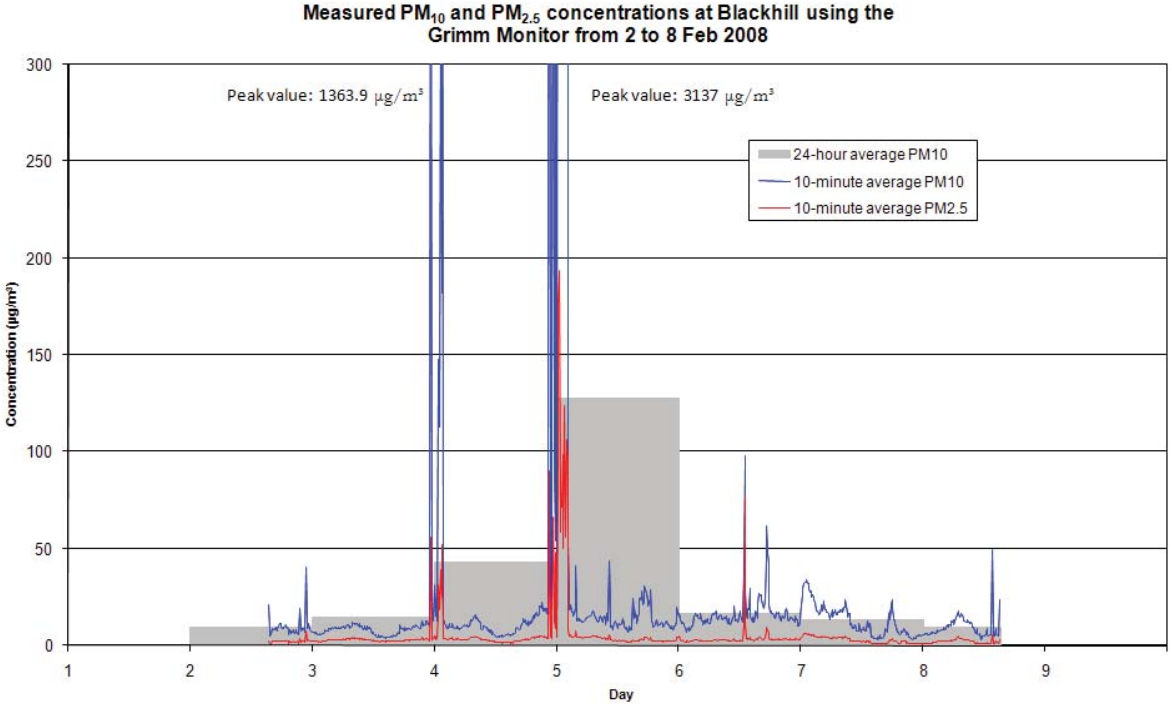
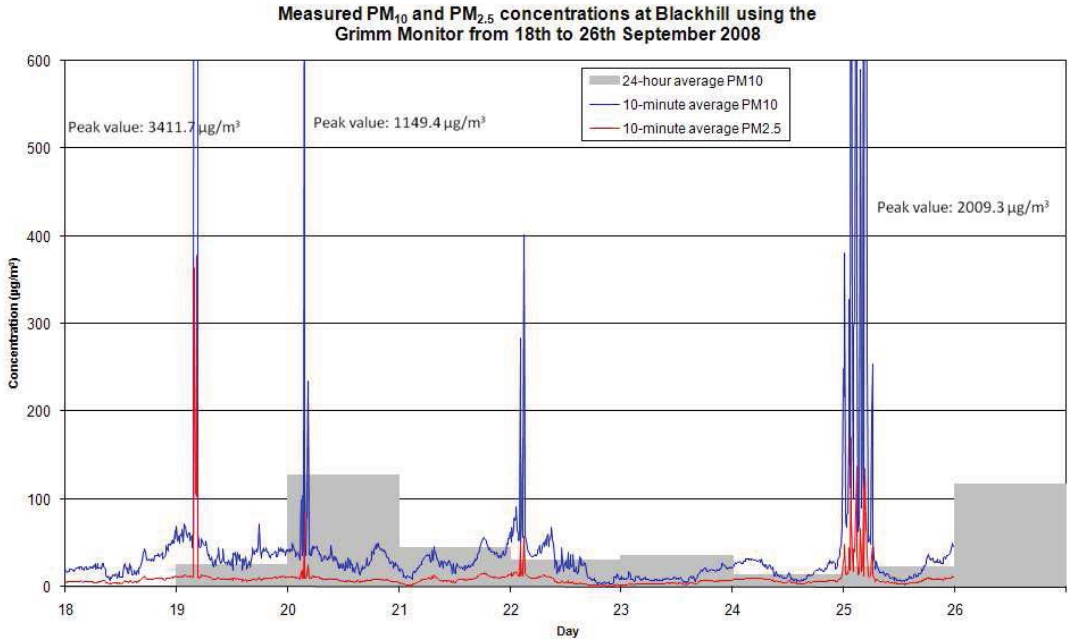


Figure 3: PM10 and PM2.5 chart for the period 18th September 2008 to 26th September 2008



3.2.3 Erosion and Sediment Control

The Erosion and Sediment Control Plan (Global Soil Systems, 2000) details the methods for erosion and sediment control at the site. The works are progressively constructed in conjunction with the advancing mining operations.

Since the last inspection the following additional works have been completed at the Donaldson Mine:

- Routine maintenance of sediment dams A, B and C alongside the coal haul road;
- Drainage lines on the rehabilitated areas were regraded and pasture seeded to minimise scouring and assist in sediment removal. Drainage design was checked immediately after construction to assess consistent grade and ensure they were free draining. This is now standard practice on site;
- Ongoing minor works, including but not limited to, silt fences, hay bales and seeding using hybrid pasture grass species such as rye-corn, silk sorghum and oats; and
- Regular inspections of silt fencing is undertaking around the site and in particular following significant rainfall events.

Graded banks and waterways will continue to be used to divert all water from the reshaped and revegetated areas prior to release from the site. Where possible, banks will be built with a stable outlet. If this cannot be achieved in the short term, or if necessary to drop the banks short, the downstream consequences will be assessed and if unacceptable, an alternate design will be adopted.

Control Strategy:

The following control measures are employed at the Donaldson in order to control erosion and sediment leaving the mine:

- Minimal disturbance (only what is required for mining);
- Diversionary works to separate clean and sediment laden waters;
- Sediment control dams;
- The employment of sediment fencing and hay bales to provide interim protection; and
- Revegetation as soon as is practical

Environmental Performance:

There were no complaints received by the mine relating to sediment control issues. Routine water quality monitoring undertaken at locations upstream and downstream of the mine is used to assess the performance of the sediment retention structures. Total Suspended Solids (TSS) are reported as an indicative measure of the effectiveness of sediment control. **Table 15** includes TSS data collected during the 2008 AEMR reporting period. Where necessary flocculates have been used in the past to precipitate sediment from solution and ensure an appropriate water quality.

A program of checking all sediment control structures is employed following rainfall events greater than 20mm in any one 24 hr period. Any repair works that are required (eg. clean out sediment dams or re-erect silt fencing etc) are undertaken as soon as is practical after the rainfall event.

3.2.4 Surface Water

The Water Management Plan (Perrens, 2000) details the measures employed by Donaldson Coal to ensure protection of surface water on and around the mine site. Surface water monitoring has been ongoing since June 2000. A plan showing the location of the water monitoring sites appears in **Appendix 2**. Ecowise Environmental (EE) is engaged by Donaldson to undertake routine sampling and analysis of six (6) permanent surface water stream monitoring locations. Grab samples are also taken opportunistically from various other locations around the mine area as required (sediment dams and mine water storage dams). The surface stream water monitoring sites include:

- Four Mile Creek Upstream (EM1);
- Four Mile Creek Downstream (EM2);
- Scotch Dairy Creek Upstream (EM3);
- Scotch Dairy Creek Downstream (EM4);
- Weakley's Flat Creek Downstream (EM5); and
- Weakley's Flat Creek Upstream (EM6).

Samples collected from the six existing stream sites are analysed for Electrical Conductivity (EC), pH, Total Dissolved Solids (TDS), Total Suspended Solids (TSS) and Sulfates (SO_4), on a monthly basis. A full suite analysis is also carried out on a quarterly basis and includes analysis for EC, pH, TDS, TSS, SO_4, Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Chloride (Cl), Fluoride (Fl), Arsenic (As), Aluminium (Al), Barium (Ba), Cadmium (Cd), Cobalt (Co), Copper (Cu), Chromium (Cr), Iron (Fe), Manganese (Mn), Lead (Pb), Zinc (Zn), Total Alkalinity as $CaCO_3$, Nitrates and Phosphates (total). Surfactants (detergents) and Total Petroleum Hydrocarbons (TPH) are included in the suite of analysis for the industrial area sump or as required.

Rising Stage Samplers (RSS) have been installed upstream and downstream of the site. These samplers collect water quality information during flow events with sample bottles located upward from the streambed at 0.2m intervals to a maximum of 1m. Samples are collected from these sites as soon as possible after flows, however this is limited to some extent by access to the sites during extended wet periods.

In addition to the physical and chemical water quality work, biological monitoring (macroinvertebrates) has been ongoing as part of the environmental impact assessment. The program consists of:

- A pre-mining baseline survey;
- A construction survey; and
- Twice yearly operational surveys.

One monitoring survey was completed during the 2008 AEMR reporting period, on the 8th April 2008.

Control Strategy:

The following control measures are employed at the Donaldson in order to ensure an appropriate level of protection to surface water on and around the mine site (there are a number of similarities with the Erosion and Sediment Control Plan as detailed above):

- Minimal disturbance;
- Source separation in order to separate water of differing quality;
- Collection and containment of mine water for dust suppression;
- Grey water and sewerage is treated by bio-cycle technology; and
- Water from workshop and washdown areas (to be constructed) is directed through a simple oil/water separator prior to the Industrial Area dam and then via a channel drain to the mine water storage dam.

Environmental Performance:

There were no water-related complaints received during the 2008 AEMR reporting period. In addition, monthly water monitoring results were routinely reviewed to determine whether there were any changes as a result of activities at the mine.

Chemical & Physical Monitoring:

A summary of three key parameters, required by the DEC Pollution Control Licence, for the reporting period as well as the pre-mining baseline is included in **Table 15** for reference.

Mean pH values for all stream-monitoring locations as recorded on a monthly basis are generally comparable to the pre-mining pH levels. The average pH of all sites is within the recommended ANZECC Guideline (pH 6.5 – 9.0) for fresh and marine waters for the protection of aquatic ecosystems. As such, it appears that the activities of Donaldson Coal in this reporting period have not affected the pH of the surrounding stream environments.

The corresponding mean EC values in **Table 15** are also generally comparable to the pre-mining values, except in three cases. Four Mile Creek Upstream and Weakleys Flat Creek Upstream and Downstream annual average EC results were higher than pre-mining results. The EC results are higher at the upstream sites suggesting that Donaldson Coal is not having any significant impact on EC levels.

The annual mean TSS values at monitoring locations were generally similar to the respective pre-mining levels apart from higher at Scotch Dairy Creek Upstream and Weakleys Flat Creek Downstream. TSS levels were impacted by very high rainfall during the year and were not directly attributable to impacts from Donaldson Coal.

TABLE 15: **SUMMARY OF KEY WATER QUALITY PARAMETERS COMPARED WITH PRE-MINING DATA.**

Sample Site	No Samples Required	No samples collected and analysed	Highest Sample Value			Lowest Sample value			Mean Sample Value		
			pH	EC	TSS	pH	EC	TSS	pH	EC	TSS
Four Mile Ck Upstream	12	12	8.3	800	96	6.5	200	6	7.1	504	21
Pre-mining	**---**	**---**	***7.44***	***522***	***90***	***6.70***	***265***	***180***	***7.06***	***276***	***32***
Four Mile Ck Downstream	12	12	7.8	320	31	7.1	150	2	7.3	226	11
Pre-mining	**---**	**---**	***7.73***	***265***	***32***	***6.40***	***120***	***2***	***7.15***	***175***	***8***
Scotch Dairy Creek Upstream	12	12	7.5	360	374	5.8	190	12	6.5	282	99
Pre-mining	**---**	**---**	***6.81***	***200***	***47***	***5.90***	***71***	***9***	***6.33***	***210***	***22***
Scotch Dairy Creek Downstream	12	12	7.8	260	113	5.8	130	8	6.6	188	44
Pre-mining	**---**	**---**	***6.80***	***270***	***1283***	***5.80***	***145***	***12***	***6.43***	***180***	***271***
Weakleys Flat Ck Upstream	12	12	7.5	4900	37	6.9	380	2	7.2	1040	14
Pre-mining	**---**	**---**	***7.49***	***310***	***3***	***6.60***	***200***	***1***	***7.15***	***249***	***2***
Weakleys Flat Ck Downstream	12	12	7.9	1860	572	6.4	420	11	7.1	967	76
Pre-mining	**---**	**---**	***7.28***	***546***	***17***	***6.40***	***230***	***3***	***7.01***	***419***	***8***

Biological Monitoring

Assessment of stream fauna is used to assess areas of environmental stress through the diversity of the macroinvertebrate population and the presence of pollutant sensitive or pollutant tolerant species. Macroinvertebrate monitoring was undertaken on the 8th April 2008. Six sites are targeted on the three major tributaries traversing the mine site. **Table 16** includes the results for the last 14 surveys as well as the baseline survey.

It is observed that the streams examined support a relatively diverse ecology including species typical of the Hunter Region, and some sensitive families of invertebrates. The predominance of mildly impaired invertebrate species is indicative of fair water quality in the streams. The majority of AUSRIVAS scores for the sites included in this report are reasonable, refer to **Table 16**.

There was no indication of obvious deterioration in water quality in the downstream sites which could be attributed to intermediate land use activities. (Tuft and Associates, 2008). Overall, there is no indication of obvious deterioration in water quality in the downstream sites, which could be directly attributed to intermediate mining activity of Donaldson. Individual site conclusions are provided by Tuft and Associates and these reports may be supplied upon request.

Table 16: **MACROINVERTEBRATE MONITORING (SPRING/AUTUMN 2001-2008) RESULTS COMPARED WITH BASELINE.**

	Four Mile Upstream	Four Mile Downstream	Scotch Dairy Upstream	Scotch Dairy Downstream	Weakleys Flat Downstream	Weakleys Flat Upstream
DIVERSITY						
Autumn 2008	**19**	**12**	**18**	**22**	**14**	**18**
Spring 2007	28	20	16	19	27	24
Autumn 2007	22	20	11	16	19	22
Spring 2006	24	20	17	20	18	17
Autumn 2006	16	23	13	18	16	21
Spring 2005	19	24	23	23	15	26
Autumn 2005	11	27	20	21	12	25
Spring 2004	17	25	12	15	10	30
Autumn 2004	17	31	17	31	22	34
Spring 2003	17	27	17	13	16	28
Autumn 2003	14	28	19	27	27	33
Spring 2002	21	24	12	20	22	25
Autumn 2002	22	19	33	27	24	34
Spring 2001	37	30	NR	30	26	31
Autumn 2001	20	30	18	25	36	31
BASELINE	30	36	39	32	39	44
SIGNAL INDEX						
Autumn 2008	**5.6**	**5.4**	**5.5**	**5.6**	**5.7**	**5.3**
Spring 2007	5.4	6.1	5.1	4.7	5.1	4.7
Autumn 2007	5.7	5.3	6.0	5.2	5.4	4.8
Spring 2006	5.4	5.3	5.5	5.3	4.3	4.3
Autumn 2006	6.4	4.8	4.7	5.6	5.7	4.4
Spring 2005	5.7	5.7	5.1	6.0	5.7	4.3
Autumn 2005	5.2	5.6	5.2	6.2	4.6	4.4
Spring 2004	5.7	5.5	5.2	4.9	4.6	5.0
Autumn 2004	6.0	5.5	5.0	4.9	5.4	5.0
Spring 2003	6.0	5.9	4.6	5.7	5.5	5.3
Autumn 2003	6.1	5.7	5.2	5.5	4.6	5.0
Spring 2002	6.0	5.7	4.0	5.9	5.7	5.4
Autumn 2002	5.7	5.4	5.2	6.0	5.5	5.3
Spring 2001	5.8	5.8	NR	5.6	5.7	5.4
Autumn 2001	5.6	5.3	5.3	5.6	5.3	5.0
BASELINE	6.0	5.7	5.7	5.6	5.5	5.4
AUSRIVAS						
Autumn 2008	**0.69 (Band B)**	**0.58 (Band B)**	**0.78 (Band B)**	**1.01 (Band A)**	**0.66 (Band B)**	**0.55 (Band B)**
Spring 2007	0.65 (Band B)	0.77 (Band B)	0.46 (Band C)	0.58 (Band B)	0.78 (Band B)	0.69 (Band B)
Autumn 2007	0.64 (Band B)	0.73 (Band B)	0.29 (Band C)	0.69 (Band C)	0.78 (Band B)	0.55 (Band B)
Spring 2006	0.78 (Band B)	0.58 (Band B)	0.48 (Band C)	0.89 (Band A)	0.77 (Band B)	0.39 (Band C)
Autumn 2006	0.54 (Band B)	0.49 (Band B)	0.48 (Band B)	0.69 (Band B)	0.68 (Band B)	out of range
Spring 2005	0.19(Band C)	0.68 (Band B)	0.68 (Band B)	0.48 (Band C)	0.60 (Band B)	0.58 (Band B)
Autumn 2005	0.52 (Band B)	0.31 (Band C)	0.48 (Band B)	0.6 (Band B)	0.42 (Band C)	0.45 (Band C)
Spring 2004	0.78 - Band B	0.58 - Band B	0.48 – Band C	0.88 - Band A	0.58 – Band B	0.69 – Band B
Autumn 2004	0.55 – Band B	0.97 – Band A	0.95 – Band A	0.68 Band B	0.93 – Band A	0.79 – Band B
Spring 2003	0.69 – Band B	0.73 – Band B	0.6 – Band B	1.06 – Band A	0.9 – Band A	0.78 – Band B
Autumn 2003	0.69 – Band B	0.73 – Band B	0.6 – Band B	1.06 – Band A	0.9 – Band A	0.78 – Band B
Spring 2002	0.67 - Band B	0.57 - Band B	0.29 – Band C	0.59 – Band B	0.58 – Band B	0.49 - Band C
Autumn 2002	0.87 – Band A	0.93 – Band A	1.03 – Band A	1.09 – Band A	0.78 – Band B	103 - Band A
Spring 2001	1.08 – Band A	0.58 – Band B	NR	0.9 – Band A	0.96 – Band A	0.69 – Band B
Autumn 2001	0.68 – Band B	0.61 – Band B	0.83 – Band A	0.95 – Band A	0.87 – Band A	0.87 – Band A
BASELINE	0.93 – Band A	1.04 – Band A	1.08 – Band A	0.82 – Band A	0.86 – Band A	0.82 – Band A

At each site a detailed field observation sheet was completed covering riparian (stream bank) vegetation, stream geomorphology, visual characteristics and odour. The RCE was calculated following the assessment which evaluates the condition of the:

- Adjacent land
- Banks
- Channel & bed (includes in-stream vegetation and algae); and
- Riparian vegetation

Table 17 provides a summary of the RCE ranking results for the last sixteen (15) surveys as well as the baseline survey.

TABLE 18: RCE RANKING FOR ALL MONITORING SITES (2000-2008).

Site	Date of Collection	Bank Condition Scores	Bank Condition Rating	Bed Condition Score	Bed Condition Rating	Stream Condition (RCE)	RCE Rating
Site 1 Four Mile Ck U/S	26/09/00	22	Excellent	10	Good	45	Excellent
	19/03/01	16	Good	6.5	Fair	45	Excellent
	11/10/01	16	Good	9	Good	40	Good
	15/04/02	12	Fair	7	Fair	34	Fair
	9/10/02	18	Good	9	Good	43	Good
	17/04/03	19	Excellent	8	Fair	43	Good
	10/10/03	16	Good	11	Excellent	43	Good
	1/4/04	19	Excellent	9	Good	48	Excellent
	6/10/04	14	Good	8	Fair	40	Good
	15/4/05	15	Good	7	Fair	40	Good
	27/9/05	15	Good	9	Good	41	Good
	11/4/06	15	Good	10	Good	41	Good
	17/11/06	14	Good	9	Good	40	Good
	20/4/07	15	Good	7	Fair	39	Good
	5/10/07	15	Good	11	Excellent	41	Good
	8/4/08	**14**	**Good**	**11**	**Excellent**	**41**	**Good**
Site 2 Four Mile Ck D/S	26/09/00		Excellent	6	Poor	39	Good
	19/03/01	21	Good	7	Fair	39	Good
	11/10/01	15	Good	7	Fair	37	Good
	15/04/02	16	Good	6	Poor	36	Fair
	9/10/02	16	Excellent	9	Good	45	Good
	17/04/03	20	Excellent	10	Good	45	Good
	10/10/03	19	Good	11	Excellent	43	Good
	1/4/04	16	Good	10	Good	44	Good
	6/10/04	17	Good	10	Good	41	Good
	15/4/05	14	Good	10	Good	39	Good
	27/9/05	14	Good	10	Good	40	Good
	11/4/06	15	Good	8	Fair	38	Good
	17/11/06	15	Good	10	Good	43	Good
	20/4/07	16	Good	8	Fair	40	Good
	5/10/07	16	Good	10	Good	40	Good
	8/4/08	**13**	**Good**	**10**	**Good**	**40**	**Good**
Site 3 Scotch Dairy Ck U/S	26/09/00	21	Excellent	8	Fair	39	Good
	19/03/01	15	Good	7	Poor	37	Good
	11/10/01	NR	NR	NR	NR	NR	NR
	15/04/02	12	Fair	9	Good	37	Good
	9/10/02	16	Fair	9	Good	43	Good
	17/04/03	17	Good	6	Poor	36	Fair
	21/10/03	15	Good	5	Poor	36	Fair
	1/4/04	19	Excellent	5	Poor	40	Good
	6/10/04	14	Good	5	Poor	36	Good
	15/4/05	14	Good	5	Poor	34	Fair
	27/9/02	14	Good	5	Poor	33	Fair
	11/4/06	13	Good	5	Poor	33	Fair
	17/11/06	16	Good	4	Very Poor	37	Good
	20/4/07	14	Good	5	Poor	36	Fair
	5/10/07	13	Good	**5**	Poor	35	Fair
	8/4/08	**13**	**Good**	**4**	**Very Poor**	**33**	**Fair**
Site 4 Scotch Dairy Ck D/S	26/09/00	20	Excellent	5	Poor	39	Good
	19/03/01	17	Good	7	Fair	39	Good
	11/10/01	16	Good	11	Excellent	42	Good
	15/04/02	15	Good	8	Fair	40	Good
	9/10/02	16	Good	5	Poor	34	Fair
	17/04/03	17	Good	5	Poor	35	Fair
	21/10/03	15	Good	6	Poor	37	Good
	1/4/04	17	Good	5	Poor	40	Good
	6/10/04	13	Good	7	Fair	37	Good
	15/4/05	15	Good	6	Poor	37	Good
	27/9/05	16	Good	6	Poor	38	Good
	11/4/06	14	Good	5	Poor	35	Fair
	17/11/06	15	Good	6	Poor	36	Fair
	20/4/07	16	Good	8	Fair	35	Fair
	5/10/07	16	Good	8	Fair	40	Good
	8/4/08	**13**	**Good**	**5**	**Poor**	**33**	**Fair**

Table 17 continued

Site	Date of Collection	Bank Condition Scores	Bank Condition Rating	Bed Condition Score	Bed Condition Rating	Stream Condition (RCE)	RCE Rating
Site 5 Weakleys Flat Ck D/S	26/09/00	21	Excellent	7	Fair	41	Good
	19/03/01	18	Good	6	Poor	40	Good
	11/10/01	14	Good	10	Good	40	Good
	15/04/02	14	Good	5	Good	37	Good
	9/10/02	17	Good	8	Fair	42	Good
	17/04/03	17	Good	8	Fair	39	Good
	10/10/03	15	Good	12	Excellent	42	Good
	1/4/04	17	Good	9	Good	45	Good
	6/10/04	14	Good	7	Fair	39	Good
	15/4/05	13	Good	6	Poor	36	Fair
	27/9/05	12	Fair	8	Fair	37	Good
	11/4/06	15	Good	9	Good	37	Good
	17/11/06	14	Good	10	Good	36	Fair
	20/4/07	17	Good	8	Fair	37	Good
	5/10/07	15	Good	8	Fair	38	Good
	8/4/08	**16**	**Good**	**8**	**Fair**	**40**	**Good**
Site 6 Weakleys Flat Ck U/S	26/09/00	19	Excellent	5	Poor	34	Fair
	19/03/01	14	Good	6.5	Fair	33.5	Fair
	11/10/01	15	Good	6	Poor	34	Fair
	15/04/02	12	Fair	9	Good	37	Good
	9/10/02	16	Good	8	Fair	39	Good
	17/04/03	15	Good	9	Good	38	Good
	10/10/03	15	Good	7	Fair	36	Fair
	1/4/04	17	Good	9	Good	39	Good
	6/10/04	14	Good	6	Poor	35	Fair
	15/4/05	14	Good	5	Poor	30	Fair
	27/9/05	14	Good	8	Fair	36	Fair
	11/4/06	11	Fair	8	Fair	34	Fair
	17/11/06	13	Good	6	Poor	29	Fair
	20/4/07	11	Fair	7	Fair	33	Fair
	5/10/07	14	Good	7	Fair	34	Fair
	8/4/08	13	**Good**	**8**	**Fair**	**37**	**Good**

3.2.5 Groundwater

The Water Management Plan (Perrens, 2000) details the measures employed by Donaldson Coal to ensure protection of ground water on and around the mine site.

Groundwater monitoring has been ongoing since June 2000. The groundwater monitoring locations at Donaldson Coal were reviewed by the DEC(EPA) as part of the EPL licence review. There are now 10 current monitoring sites, the locations of which are shown on the revised "Location of Site Groundwater Wells – Figure 5.12". A copy is provided in **Appendix 2**. Two bores were replaced in line with the review. Ecowise Environmental is engaged by Donaldson Coal to undertake the routine sampling and analysis of the monitoring sites.

Control Strategy:

The groundwater piezometers are monitored to determine impacts on both Standing Water Levels (SWL) and ground water quality. In some cases there are several piezometers in the one hole (multi-level) measuring several aquifers throughout the strata.

A regional site was included in the monitoring program, REGDPZ1. It is located in Avalon Estate approximately 1.2km to the north of the active mining area.

The analytes EC, pH, TDS, TSS and SO_4 are routinely taken each month at all of the current piezometer sites. A full suite analysis is taken every six months and includes analysis of EC, pH, TDS, TSS, SO_4, Ca, Mg, Na, K, Cl, Fl, As, Al, Ba, Cd, Co, Cu, Cr, Fe, Mn, Pb, Zn and Total Alkalinity as $CaCO_3$.

The standing water level of each of the monitoring wells is routinely measured each month.

Environmental Performance:

There were no groundwater-related complaints received by the mine. In addition, monthly water monitoring results were routinely reviewed to determine whether there were any changes as a result of activities at the mine.

A summary of the three key parameters required by the EPL (pH, EC and the Standing Water Level) for the reporting period as well as the pre-mining baseline is included in **Table 18**.

Generally the average Standing Water Levels (SWL) were lower than the baseline period, however the variation in water level could be attributed to seasonal variations as there are similar trends across all sites. Additionally, the SWL are generally higher than the corresponding values in the 2007 AEMR reporting period. This is most likely due to the recharge of the aquifers after the heavy rain events in June 2007.

Average pH values are comparable to the pre-mining values and have generally not fluctuated substantially from the values recorded in the 2007 AEMR reporting period, refer to **Table 18**. The EC values are generally either lower or similar to pre-mining values. **DPZ 7** was destroyed in September 2007 and **DPZ 9** was destroyed in March 2007 due to progressive mining operations.

Overall, it appears that Donaldson has had negligible or no impact on water quality of the surrounding off site groundwater resources during the 2008 AEMR reporting period.

TABLE 18: SUMMARY OF KEY GROUNDWATER PARAMETERS COMPARED WITH PRE-MINING BASELINE DATA.

Sample Site	No Samples Required	No samples collected and analysed	Highest Sample Value			Lowest Sample value			Mean Sample Value		
			pH	EC	SWL*	pH	EC	SWL*	pH	EC	SWL*
DPZ2	12	0	-	-	-	-	-	-	-	-	-
Pre-mining	***---***	***---***	***No pre-mining samples available***								
DPZ3	12	12	7.2	13990	13.28	5.4	220	8.44	6.3	4974	9.45
Pre-mining	***---***	***---***	***6.96***	***11350***	***11.51***	***5.99***	***10200***	***12.05***	***6.59***	***10860***	***11.76***
DPZ5	12	12	7.7	7930	6.75	5.3	360	6.32	6.3	3013	6.51
Pre-mining	***---***	***---***	***7.21***	***8520***	***5.73***	***6.72***	***4280***	***5.90***	***7.37***	***6986***	***5.81***
DPZ6	12	12	6.5	3970	25.61	5.8	2860	24.86	6.1	3744	25.37
Pre-mining	***---***	***---***	***No pre-mining samples available***								
DPZ7@50m	10	0	-	-	-	-	-	-	-	-	-
Pre-mining	***---***	***---***	***6.14***	***2390***	***21.47***	***5.36***	***2180***	***22.00***	***5.76***	***2270***	***21.78***
DPZ8	12	7	7.0	2120	31.81	5.6	1760	26.60	6.4	1984	30.88
Pre-mining	***---***	***---***	***5.66***	***1820***	***24.35***	***5.46***	***1690***	***24.35***	***5.56***	***1755***	***24.35***
DPZ9	4	0	-	-	-	-	-	-	-	-	-
Pre-mining	***---***	***---***	***6.32***	***2940***	***17.37***	***5.47***	***2221***	***17.65***	***6.02***	***2563***	***17.49***
DPZ10	12	12	7.7	4220	13.52	6.4	3530	12.87	6.6	3714	13.21
Pre-mining	***---***	***---***	***6.97***	***3760***	***12.40***	***6.48***	***3670***	***12.40***	***6.71***	***3611***	***12.40***
DPZ12	12	12	7.2	18660	25.55	6.1	1630	15.57	6.6	8203	18.25
Pre-mining	***---***	***---***	***No pre-mining samples taken due to restricted access to private property***								
DPZ13	12	12	7.2	14720	7.28	6.7	12830	7.02	6.9	13673	7.14
Pre-mining	***---***	***---***	***7.22***	***13750***	***7.25***	***6.67***	***12200***	***7.01***	***6.87***	***12907***	***7.14***

* Standing Water Level is recorded as metres (m) below the natural surface. Some sites were dry at the time of sampling, with no sample available.

3.2.6 Contaminated Land

Donaldson coal has been operating since January 2001, and as such there is little occurrence of contaminated land on the site. The exception to this would be some minor surface contamination of hydrocarbons in areas where hydrocarbons are stored, in the workshop area and the go-line (where trucks are parked between shifts and at crib). There has also been some minor surface contamination recorded at the bulk fuel storage facility and refueling point.

Control Strategy:

The following control measures are employed at the Donaldson Coal Mine in order to ensure that contamination of land is minimal.

- There are no underground storage tanks (UST) on the site;
- Earthen and concrete bunding is used as secondary containment for the bulk storage of hydrocarbons and chemicals;
- Oil spill mop and absorbents are used to clean up spills;
- When spills occur the contaminated material is excavated and taken to a landfarm where it is remediated prior to being placed back in the fill;
- Oil/Water separators are used to remove any residual hydrocarbon from washdown waters;
- Spills are recorded on an Environmental Incidents report. This form is used to identify where improvements can be made to reduce the likelihood of the incident re-occurring;
- Both the mining contractor and the Donaldson Coal Environmental Officer undertake informal and formal inspections of the workshop areas to ensure hydrocarbons and chemicals are stored appropriately;
- All new employees are taken through an Environmental Awareness Induction prior to commencing work at the mine. This includes an explanation of ways to avoid spills and to ensure that appropriate actions are taken to clean up the spill and ensure that it is remediated;
- Toolbox talks are undertaken with all employees to explain ways to avoid spills and to ensure that appropriate actions are taken to clean up the spill and ensure that it is remediated; and
- A land farm area has been constructed on the out-of pit dump where contaminated soil is stored temporarily and treated to remove the hydrocarbons before being placed back on the rehabilitated areas and revegetated.

Environmental Performance:

There are no significant areas of land contamination. In addition, routine monitoring for hydrocarbons and surfactants is undertaken at the Industrial Area dam that receives the water from the workshop area. To date hydrocarbons (measured as Total Petroleum Hydrocarbons (TPH)) have not been recorded in routine environmental monitoring of the Industrial Area Dam. Ongoing monitoring and routine inspections will continue to detect the occurrence of spills (accidental or otherwise) and remediate them appropriately.

3.2.7 Threatened Flora

There was one species of threatened flora identified during the EIS, *Tetratheca juncea* (Black-eyed Susan). As a result a *Tetratheca juncea* Management Plan was developed by Gunninah (2000b).

The aim of the plan is to provide a comprehensive program for the *Tetratheca juncea* population in the south western portion of the mine site.

A survey and identification report (Gunninah 2000c) was completed, which located the boundaries of the population and defined the limit of the conservation precinct. Subsequent work during 2001 and 2002 has extended the boundary and up to an additional 200 plants have been found during routine monitoring and vegetation characterisation.

In addition approximately four hundred plants have been discovered during routine pre-clearing surveys and monitoring episodes. A large proportion of these plants fall outside of the active mine area, adding further conservation significance to the area(s) identified and managed by Donaldson Coal as the *Tetratheca juncea* Conservation Area (TjCA) (as discussed below).

In 2005, a design was developed for the experimental translocation of *Tetratheca juncea* from the planned mine disturbance area. The relocation is a management technique addressed in the *Tetratheca juncea* Management Plan (Gunninah 2000b).

The experimental design for the translocation was based on a study currently being conducted in the Gwandalan area (Ecobiological 2005). The ongoing monitoring of the translocated plants will focus on collecting data and information about the circumstances under which the plants are growing. Each plant and each recipient site has been photographed following translocation and will be photographed every twelve months for 5 years. The plants were monitored and watered on a weekly basis for 6 weeks post planting to help ensure maximum initial survival and will be inspected twice per year for the five-year period.

The *Tetratheca juncea* Conservation Area Annual Report 2007 (Ecobiological, 2008) was prepared during this 2008 AEMR period.

Control Strategy:

The following control measures are employed at the Donaldson Coal Mine in order to ensure a high level of conservation for the threatened plant species *Tetratheca juncea*:

- The dedication of 650ha of bushland conservation around the mine to conserve habitat;
- The reduction of the proposed mining footprint and the establishment of a conservation precinct protecting a known population of *Tetratheca juncea*;
- Ongoing mapping and management protocols; and
- Pre-clearing surveys by a qualified biologist prior any clearing activities.

In addition Donaldson Coal has supported both financially and technically, an honours student completing studies in Environmental Management at the University of Newcastle. The project commenced in January 2002 and is considering the ecology and growth of *Tetratheca juncea*.

Environmental Performance:

A baseline report was completed in January 2003 by Barker Harle, which describes the implementation of the TjMP and includes baseline information for use in subsequent reports. Subsequent monitoring and reporting is undertaken on an annual basis.

The following is a summary of the monitoring program and works that has been completed in the *Tetratheca juncea* Conservation Area (TjCA).

- The overall monitoring and collection of data for the population is based on a 40 x 40m grid, which has been established permanently across the entire population;

- One hundred individual plants have been permanently pegged and tagged. The co-ordinates of these plants have been referenced into the 40 x 40m grid. The location of each of these plants was selected so those individuals growing within the range of the micro-vegetative communities present in the TjCA were represented. The size of these plants has been recorded;

- A detailed survey has been carried out to describe the overstorey, shrubs to 2m high and groundcover vegetative communities present in the TjCA;

- Ten 10 x 10m monitoring quadrants have been pegged out throughout the population. Following the completion of the vegetation survey these quadrants have been located so that each one is in a different vegetative community in which T. juncea grows. The floristic content and abundance, using the modified Braun-Blanquet scale, of the vegetation within each of these quadrants has been described in detail;

- A detailed plant count was planned for late 2002 and again in 2004, however persistent drought conditions have significantly reduced the flowering season, meaning that a count was not considered reliable during this reporting period.

The following is a summary from the *Tetratheca juncea* Conservation Area Annual Report 2007 (Ecobiological, 2008):

- The three-year pollination rate data shows a downward trend in pollinator activity across the population and a consequence of this would be a depletion of the *Tetratheca juncea* seedbank. An explanation for this downturn may lie in the brooding requirements of the native bees. The majority of the bee species that are capable of collecting pollen from *Tetratheca juncea* using vibration, make their nests in small tunnels in the ground. As time passes since the last fire, the ground vegetation becomes more dense with fewer exposed areas available for nesting. A sharp increase in pollinator numbers and subsequent seed capsule production in the flowering following a fire has been recorded (C. Driscoll pers obs).

- It is 8-10 years since the last fire through the TjCA and it is recommended that during the cooler months of 2008 a low temperature burn be conducted by the local Rural Fire Service. Rather than burn the entire TjCA it is recommended that a small experimental burn be carried out in the area shown in Figure 5. This area has been selected because the topography allows for control of the perimeter of the burn and the area contains a substantial number of *Tetratheca juncea* clumps.

- There has been one published study (Norton 1994) and one unpublished study (Driscoll unpub) looking at the response of *Tetratheca juncea* to fire. Both studies showed that the plant clumps resprout following fire. Norton (1994) noted that the temperature of the fire and length of heating experienced by the plant clumps had an effect on their ability to resprout. High temperatures are likely to burn deep into the rootstock and result in the plant being killed. Driscoll (unpub) observed that even if the main rootstock was killed the plant could resprout from secondary roots away from the original location.

  Two relocation events of *Tetratheca juncea* plants were undertaken during the 2006/2007 AEMR periods, as these plants were in the path of mining activities. This occurred in October 2006, where 53 plants were tagged and relocated, and April 2007 where 107 plants were tagged and relocated into an existing relocation program. The plants were then watered and monitored over a period of 6 to 8 weeks. Fortunately the region had significant rain events throughout both of these relocation periods. The plants will continue to be monitored and results will be reported annually in conjunction with the monitoring results for the existing relocation program. The annual survey was conducted in August 2008 and the monitoring indicated a significant increase in identifiable living

plant parts (including stems and flowers) compared with the inspection in May 2007, but the overall living plant numbers remained the same as the previous year.

Grevillea parviflora subsp. *parviflora* is listed as a Vulnerable species in both the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. During pre-clearing surveys, several populations of the species have been located on the Donaldson property with some being potentially within the mining footprint. The Donaldson Flora and Fauna Management Plan (EcoBiological 2007) requires that where threatened plants are found to be within the mine disturbance area, and it is not possible to plan around them, the plants be relocated using the best available information and methods. The recipient sites were located as close as possible to the source sites to minimise the disturbance during transport. The plants were then watered and monitored up to 6 weeks after relocation and generally greater than 70% survival rate was observed.

3.2.8 Threatened Flora

Several species of threatened fauna were identified during the EIS and supplementary reports, including both the areas proposed for mining and the immediate environs. They include the following:

- The Powerful Owl;
- The Masked Owl;
- The Barking Owl;
- The large footed Mytotis; and
- Little Bent-winged Bat.

Since the initial development of the Flora & Fauna Management Plan the Sooty Owl and the Squirrel Glider have also been recorded on site.

Control Strategy:

The following control measures are employed at the Donaldson Coal Mine in order to ensure a high level of conservation for the threatened fauna species found on the site:

- The dedication of 650ha of bushland conservation around the mine to conserve habitat;
- Ongoing survey and management protocols;
- Pre-clearing surveys by a qualified biologist prior any clearing activities;
- Routine annual quadrant monitoring,
- Minimal clearance to only what is required; and
- Ongoing and progressive rehabilitation of disturbed areas.

The following flora and fauna monitoring activities were undertaken during the reporting period:

- Surveys of the foliage projective cover of each quadrat;
- Surveys of height and basal area of trees within each quadrat;

- Small mammal trapping (coinciding with autumn) within a radius of 300 metres centered on each quadrat;
- Insectivorous bat call recording at each quadrat;
- Owl call playback in the vicinity of each quadrat;
- Spotlighting in the area around each quadrat to observe any nocturnal birds and mammals;
- General observations around the larger conservation area; and
- Threatened species assessment.

Six monthly and annual reports are produced compiling the work undertaken throughout the year, along with detailed annual data interpretation and comparison with the baseline study. In addition Donaldson Coal has previously supported both financially and technically, an honors student completing studies in Environmental Management at the University of Newcastle. The project commenced in July 2002 and considered a comparison in the ecology of the Powerful Owl in both disturbed and undisturbed environments. The individuals at Donaldson Coal are an important population considered in this research project.

Results for the annual flora and fauna monitoring survey conducted in late 2007 indicates that:

- Plant species numbers have increased since 2001 as have all floristic structural components which is indicative of a dynamic plant community with apparently high recruitment from the seed pool, normally an indicator of healthy plant community status.
- These continually increasing habitat structural attributes and floristic diversity however is not reflected in faunal content. There has been an observed decline in mammal species between 2001 and 2007 most notably within the arboreal mammals. This decline is a probable indicator of the pressures being placed on the remnant habitat by the increasing habitat loss and the ever shrinking size of the Donaldson habitat remnant overall.
- The decline or disappearance of several species of arboreal mammal that has occurred at Donaldson may also be having an impact on the Powerful Owl population that occurs in the area.
- The declining mammal species are all common prey items of the Powerful Owl and together with the general loss of foraging range may place significant pressure on the Powerful Owls at the subject site.
- Where possible management options should be put in place to improve declining faunal numbers and diversity. Such measures might include a major spraying campaign to rid the site of most of the lantana that is constantly encroaching on native forest and a study to investigate the impact of shrinking habitat patches and loss of prey items on the Powerful Owl.

Environmental Performance:

The monitoring undertaken to date suggests that flora is establishing well after mining but that there is additional pressure being placed on fauna populations in remnant habitats from habitat loss.

The consultants, Ecobiological, did not find any signs (sightings, scats or scratchings) of Koalas during their searches during the 2007 reporting period.

3.2.9 Weeds and Pests

The area was heavily disturbed by fire, dumping of rubbish, 4 wheel drive vehicles and motorcycles prior to the commencement of mining. As a result there have been a number of weeds introduced into the area (pests are not considered as much of a problem).

Donaldson has undertaken to manage the weeds and pests as part of the management of the property including the areas in the Bushland Conservation Area (BCA) the areas to be disturbed by mining and the rehabilitated areas.

Control Strategy:

The weed management program involves the active control and monitoring throughout the site to control and prevent the spread of invasive weeds (including the rehabilitated areas). The following control strategies may be used on the site:

- Observance of the requirements prescribed by the NSW Noxious Weeds Act (1993);
- Assessment of weeds during pre-clearing and monitoring surveys;
- Dedicated weed control programs along access roads, tracks and exploration lines;
- Ensuring vehicles coming onto the site are clean and free of soil that could transfer weeds from other sites; and
- Restricting access to the Donaldson mine site by the erection of a fence and gates in an attempt to control illegal dumping.

The primary objective of the pest control strategy is to control the number of feral animals on the site. This is achieved by assessing the presence of pests during the routine monitoring program, pre-clearing surveys and during day to day activities. Where necessary the following specific control measures may be employed:

- Detailed surveys for feral animals; and
- Targeted baiting and trapping programs.

Environmental Performance:

Donaldson Coal continued the noxious weed control by the spraying of *Pampas Grass* plants around the site on disturbed areas. Weed control of *Pampas Grass* was conducted in March/April 2008 within and adjacent to the *Tetratheca juncea* Conservation Area. This was carried out by suitably qualified personnel utilising manual shears and a Glyphosate product. The works was carried out within one day. The individual *Pampas Grass* plants were cut at the stem and immediately painted with the herbicide. All seed heads were bagged and disposed off site in a safe and secure manner.

Feral animals are not considered a major problem, however should it be determined in the future that action is required, the above control strategies will be employed.

3.2.10 Blasting

Blasting activities commenced at Donaldson Coal mine on the 15th November 2001. A total of 113 blasts were undertaken at the mine during the 2008 AEMR reporting period compared to 88 blasts in the 2007 AEMR reporting period.

Prior to the commencement of blasting in 2001, structural surveys of all properties within 1.5km of the blast locations at the mine were completed. A copy of each report was presented to the resident and also kept on file at the mine.

On the 1st May 2001, five permanent blast monitoring stations (measuring peak particle velocity - ppv (mm/s) and Airblast (dB Linear) were installed and commissioned at the five locations described below:

1. Fairfax Regional Printing Facility;
2. Bartter Poultry Farm – Farm 6;
3. Weakley's Drive (Chidgey), Beresfield;
4. Avalon Estate, Thornton; and
5. The Hunter Water Pipeline.

A map, showing the blast monitors location is included in **Appendix 2** of this report.

The nearest unit to the mine (Weakleys Drive) was established as a trigger unit. When it records a blast at the mine it triggers the other units to capture the relevant data. A trigger limit for peak particle velocity (mm/s) has been determined in order to minimise the number of spurious events recorded by the monitor. The loggers are automatically downloaded at the end of each day using scheduling software. Waveforms are recorded by the logger for each event and are used in the interpretation of the results (eg. separating wind gust from overpressure events). This system was found to miss small blasts of low vibration and a near field unit was established in March 2003 to improve data capture. This is discussed in more detail below.

The Barter site monitor results have not been included, as the site has been vacated and is now derelict. The Fairfax Regional Printing facility is monitored for ground vibration as required by the development consent.

Control Strategy:

The following control measures have been employed at the Donaldson Coal Mine in order to ensure that the limits set out in the Development Consent and DECC (EPA) Licence are not exceeded.

- Establishment of a site specific site law using a ten (10) hole trial blasting program and detailed computer modelling;
- Blast design considerations (burden and spacing, stemming, MIC, etc);
- Considerations of explosive loading, initiation hook up and firing;
- Use of experienced blast contractors;
- Monitoring the meteorological conditions prior to blasting;
- Avoidance of concurrent blasts with adjoining Coal Mines; and
- Notifying Landowners and occupiers of blast events.

Environmental Performance:

A summary of the Peak Particle Velocity monitoring results for blasts undertaken during the period is presented in **Table 19.** The maximum vibration (peak particle velocity) recorded at the sites, excluding the Hunter Water Pipeline site, during the reporting period was 0.96 mm/s, which was below the applicable criteria (5 mm/s).

TABLE 19: SUMMARY OF PEAK PARTICLE VELOCITY (ppv) MONITORING RESULTS (mm/s).

Sample Site	No Samples Required	No samples collected and analysed	Highest Sample Value	Lowest Sample value	Mean Sample Value
Weakleys Dr (Chidgey)	113	100	0.32	0.020	0.063
Fairfax Printing	113	107	0.78	0.020	0.085
Avalon Estate	113	110	0.299	0.010	0.071
HWC Pipeline	113	104	22.93	0.080	3.19

A summary of the overpressure monitoring results for blasts undertaken during the period is presented in **Table 20** below. DCCC(EPA) Licence criteria are applicable at the Weakleys Drive and Avalon Estate monitors. All blasts at these sites recorded blast overpressure below 115dB(L), well within the Licence conditions.

TABLE 20: SUMMARY OF OVERPRESSURE (dBL) MONITORING RESULTS.

Sample Site	No Samples Required	No samples collected and analysed	Highest Sample Value	Lowest Sample value	Mean Sample Value
Weakleys Dr (Chidgey)	113	100	117.4	93.0	100.6
Avalon Estate	113	107	112.9	83.2	102.3
HWC Pipeline	113	104	121.8	91.8	108.1

Overall the data capture rate during the reporting period has been very good. **Table 21** shows the data capture rate for each of the blast monitoring units during the reporting period. None of the blasts undertaken at Donaldson during the period were too small to trigger the monitors that are some 1100m from the mine. This is an improvement from last year. The table below considers the data capture rate (%) both with and without the smaller blasts.

TABLE 21: SUMMARY OF DATA CAPTURE RATES – BLAST MONITORING UNITS

Monitoring Location	% Data Capture
Chidgey (Weakleys Drive)	92.
Fairfax Regional Printing Press	97.
McDonnell's (Avalon Estate)	94.
Hunter Water Pipeline	
OVERALL:	**95.0**

The main causes for data loss have been non-delivery of the SMS trigger signal due to non-specific problems with the Telstra network, and the blast monitor failing to log onto the network. The rate of data capture was slightly better from that recorded in the 2007 AEMR reporting period. The high rate of data capture has been achieved by way of the following initiatives implemented by the mine.

a) A near field "trigger" unit was established on the 17 March 2003 in the pit to ensure that the smaller blasts are not missed. When the monitor's vibration threshold is triggered it transmits the trigger to the outlying units;

b) Detailed reviews of system failures (replacement of faulty components). This includes a monthly test of components in the field and re-calibration and servicing once a year;

c) Monitors are now interrogated by the automatic scheduler system on a daily basis to detect any failures early and ensure correction prior to a blast; and

d) The units will be upgraded as part of the annual calibration. Each monitor will get the latest software updates each time they are sent for service repair or calibration.

3.2.11 Noise

Richard Heggies & Associates[2] have completed four routine quarterly unattended continuous noise surveys for Donaldson during the 2008 AEMR reporting period. The dates for the surveys are as follows:

- Monday 10th December – Friday 14th December 2007;
- Tuesday 11th March- Monday 17th March 2008
- Wednesday 11th June – Tuesday 11th June 2008; and
- Wednesday 27th August – Tuesday 2nd September 2008

Operator attended surveys were also conducted to verify the unattended logging results and to determine the character and contribution of noise sources to the total ambient noise. The dates of these attended surveys were as follows:

- Monday 10th December (daytime) and Thursday 20th December 2007 (evening and night time);
- Thursday 10th April 2008 (night-time)
- Tuesday 11th June (daytime) and Monday 23rd June 2008 (evening and night-time); and
- Wednesday 27th August 2008 (daytime) and Monday 8th September 2008(evening) and Tuesday 9th September 2008 night-time)

Richard Heggies & Associates[2] have performed baseline and preceding quarterly surveys at 11 locations around the Donaldson mine site Richard Heggies & Associates, (2004, 2005a-c). Based on these surveys, the noise monitoring is now concentrated at the four potentially most affected areas at time of survey. These locations are provided in **Table 22**.

TABLE 22: LIST OF PRESENT NOISE MONITORING SITES

Location	Donaldson Monitoring location
98 Weakleys Dr., Beresfield	Location A
Leneghans Drive	Location C
684 Black Hill Road , Black Hill	Location F
3 Lord Howe Drive, Ashtonfield	Location I
Bus Depot- Spotted Gum Drive, Ashtonfield	Location J
"Bartter Enterprise"s, Farm No. 6	Location K

As the mine moves further to the south/west, additional monitoring sites will be included as required. A map showing the location of the above monitoring sites can be found attached as **Appendix 2** to this report.

Control Strategy:

The following control measures have been employed at the Donaldson Coal Mine in order to ensure that the limits set out in the development consent are not exceeded:

- Construction of an 8m high acoustic barrier which will be progressively moved with the excavation;

[2] RICHARD HEGGIES & ASSOCIATES (Newcastle Office), Newcastle, NSW. Ph:02 49698571

- Reduced night time operations, operating only on a day and afternoon roster with the full overburden removal and mining fleets;
- Testing of all equipment prior to being put to work at the operation;
- Constructing roadways and dumps to best use the natural shielding of the topography;
- Routine noise monitoring and complaint based investigative monitoring to determine compliance with noise limits;
- Monitoring the meteorological conditions and re-arranging the pit where possible to shield noisy activities during temperature inversions.

Environmental Performance:

Donaldson Coal has been monitoring noise from the mine since the commencement of operations in January 2001. The following sections summarise the results from both the routine attended and continuous monitoring undertaken during the reporting period.

Results of Unattended Continuous Surveys

Monday 10th December – Friday 14th December 2007 (December Quarter)

Table 23 presents a comparison between the noise statistics collected during the December quarter 2007 unattended continuous survey and the pre-mining baseline statistics.

TABLE 23: Unattended Continuous Monitoring Ambient Noise Levels, DECEMBER 2007 MONITORING PERIOD.

Location	Period	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}
A Weakleys Drive Beresfield	**Daytime**	62	59	52	58
	Evening	62	58	50	58
	ENCM Daytime	57	54	45	51
	Night-time	60	55	45	54
C 28 Phoenix Drive Black Hill	**Day time**	60	51	43	59
	Evening	53	49	42	48
	ENCM Daytime	58	50	59	42
	Night	52	50	40	49
F Lot 684 Black Hill Rd Black Hill	**Daytime**	66	55	43	55
	Evening	63	57	41	57
	ENCM Daytime	66	56	56	42
	Night-time	58	51	40	51
K Bartter Farm No.6	**Daytime**	58	54	46	52
	Evening	56	52	45	52
	ENCM Daytime	57	54	51	45
	Night-time	56	50	39	50

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime – 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm to 10.00 pm; Night-time - 10.00 pm to 7.00 am, Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night-time 10.00 pm to 7.00 am.

Ambient LA_{90} Noise Levels

A summary of ambient LA90 noise levels can be found within **Table 23**.

The summary of results in Table 24 show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending December 2007 were generally higher than levels recorded during the baseline monitoring process at all locations. Given observations made during operator attended noise surveys, it is highly likely that the rise in noise levels would be caused by increase in traffic volumes and insect/cricket/frog activity (a common occurrence in the summer months) and not from Donaldson Mine activity.

A comparison of the current monitoring period (December 2007) with the previous monitoring period (September 2007) shows an increase in LA90 noise levels, most notably during the evening and night-time periods at all monitoring locations with the exception of Location F. This result again reflects the increase in traffic and insect/frog/cricket activity observed during the operator attended noise surveys.

A comparison of the current monitoring period (December 2007) with the coinciding monitoring period last year (December 2006) indicates that LA90 noise levels recorded during all periods at all locations were generally similar. The greatest variance of 5 dBA was recorded during the nighttime period at Location A (Weakleys). All other recorded noise levels generally remained within 3 dBA of levels recorded during December 2006.

Ambient LA_{10} Noise Levels

A summary of ambient LA10 noise levels can be found within **Table 23**.

The summary of results in Table 24 show that ambient day, evening and night time LA10 noise levels recorded for the quarter ending September 2007 were generally similar to levels recorded during the baseline monitoring process at locations A and K. A significant increase in LA10 noise level has occurred at Location C and more notably at Location F during the evening and nighttime periods. Operator attended noise surveys noted that LA10 noise levels were dominated by local traffic at both Locations with a slight Donaldson Mine contribution recorded at Location F of 38 dBA. Therefore, the increase in LA10 noise levels was not caused by Donaldson mine activity. A comparison of the current monitoring period (December 2007) with the previous monitoring period (September 2007) indicates that LA10 noise levels have generally remained similar to levels recorded during the June 2007 period at all locations.

A comparison of the current monitoring period (December 2007) with the coinciding monitoring period last year (December 2006) indicates that LA10 noise levels recorded during all periods were generally similar at Locations A, C and K, although have risen significantly during the evening and night-time periods at Location F. Operator attended noise surveys at Location F identified a Donaldson mine contribution of 38 dBA during the night-time period which is within the consent noise limit. Therefore, it is likely that the increase in LA10 noise levels was from local traffic as observed during the attended noise surveys and not from Donaldson mine activity.

Tuesday 11th March – Monday 17th March 2008 (April Quarter)

Table 24 presents a comparison between the noise statistics collected during the March 2008 quarter unattended continuous survey and the pre-mining baseline statistics.

TABLE 24: **Unattended Continuous Monitoring Ambient Noise Levels, MARCH MONITORING PERIOD.**

Location	Period	L_{A1}	L_{A10}	L_{Aeq}	L_{A90}
A Weakleys Drive Beresfield	**Daytime**	60	55	47	55
	Evening	60	54	45	52
	ENCM Daytime	60	55	46	54
	Night	57	52	43	52
C 28 Phoenix Drive	**Daytime**	54	46	39	50
	Evening	51	48	42	47
	ENCM Daytime	53	47	39	48
	Night	53	49	43	50
F Lot 684 Black Hill Road, Black Hill	**Daytime**	67	57	41	56
	Evening	62	53	42	53
	ENCM Daytime	66	55	40	55
	Night	55	50	41	50
K Bartter Farm No.6	**Daytime**	60	55	43	53
	Evening	61	59	54	58
	ENCM Daytime	-	-	-	-
	Night	63	61	57	60

EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am, Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

Ambient LA_{90} Noise Levels

The summary of results in **Table 24** show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending March 2008 were generally higher than levels recorded during the baseline monitoring process at all locations. This increase is most significant at Location F where a 7 dBA and 10dBA increase was recorded in the evening and night-time periods respectively. Given observations made during operator attended noise surveys, it is highly likely that the rise in noise levels would be caused by increase in traffic volumes and insect/cricket/frog activity (a common occurrence in the warmer months) and not from Donaldson Mine activity.

A comparison of the current monitoring period (March 2008) with the previous monitoring period (December 2007) shows that LA90 noise levels have generally remained similar to or less than those recorded during the last monitoring period. A comparison of the current monitoring period (March 2008) with the coinciding monitoring period last year (March 2007) indicates that LA90 noise levels recorded during all periods at all locations were generally similar with the exception of Location C during the night (8 dBA increase) and Location F during the evening (6 dBA increase). All other recorded noise levels remained within 3-4 dBA of levels recorded during March 2007.

Ambient LA_{10} Noise Levels

The summary of results in **Table 24** show that ambient day, evening and night time LA10 noise levels recorded for the quarter ending March 2008 were generally similar to or less than levels recorded during the baseline monitoring process at locations A and C. An increase in LA10 noise level of 6 dBA has occurred at Location F during the daytime. Operator attended noise surveys at

this location noted that the LA10 noise levels were dominated by local traffic and not from Donaldson mine activity. A comparison of the current monitoring period (March 2008) with the previous monitoring period (December 2007) shows that LA10 noise levels were less than levels recorded during the December 2007 period with the exception of Location F where a 2 dBA increase was recorded during the day.

A comparison of the current monitoring period (March 2008) with the coinciding monitoring period last year (March 2007) indicates that LA10 noise levels recorded during all periods were generally similar at Location A. A significant increase of 8 dBA has been recorded at Location C during the night-time and 6 dBA at Location F during the evening. Operator attended noise surveys at these locations noted that noise sources such as local traffic and insect/cricket/frog activity were dominant and therefore likely to have contributed to the increased noise levels. No Donaldson Mine activity was audible during the attended noise surveys and therefore unlikely to have contributed to the overall LA10 noise level.

Wednesday 11th June – Tuesday 17th June 2008 (June quarter)

Table 25 presents a comparison between the noise statistics collected during the June 2008 quarter unattended continuous survey and the pre-mining baseline statistics.

TABLE 25: Unattended Continuous Monitoring Ambient Noise Levels, JUNE MONITORING PERIOD.

Location	Period	L_{A1}	L_{A10}	L_{Aeq}	L_{A90}
A Weakleys Drive Beresfield	**Daytime**	60	56	46	54
	Evening	58	53	44	52
	ENCM Daytime	-	-	-	-
	Night	58	52	40	49
C 28 Phoenix Drive Black Hill	**Daytime**	56	47	36	53
	Evening	49	43	36	46
	ENCM Daytime	56	50	36	53
	Night	46	39	32	43
F Lot 684 Black Hill Road, Black Hill	**Daytime**	64	55	43	55
	Evening	57	52	46	51
	ENCM Daytime	63	55	44	42
	Night	61	53	42	52
K Bartter Farm No.6	**Daytime**	57	54	45	52
	Evening	56	52	51	49
	ENCM Daytime	57	53	42	51
	Night	64	49	37	49

*Note: * Noise logger failed*

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am, Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

Ambient LA_{90} Noise Levels

The summary of results in **Table 25** show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending June 2008 were generally similar (within 4 dBA) to levels

recorded during the baseline monitoring process at Locations E and K. A significant increase of 11 dBA was recorded in the evening and night-time periods at Location F. Given observations made during operator attended noise surveys, it is likely that the rise in noise levels was caused by increase in traffic volumes and insect/cricket/frog activity and not from Donaldson Mine activity. A comparison of the current monitoring period (June 2008) with the previous monitoring period (March 2008) shows that LA90 noise levels have generally remained similar at Location F.

A comparison of the current monitoring period (June 2008) with the coinciding monitoring period last year (June 2007) indicates that LA90 noise levels recorded during all periods at all locations were generally similar with the exception of Location K during the night (5 dBA increase). Given observations made during operator attended noise surveys, it is likely that the variance in noise levels was caused by local traffic and insect/cricket/frog activity and not from Donaldson Mine. No comparison can be made to noise levels at Location F due to a noise logger fault in the June 2007 monitoring period.

Ambient $L10_{10}$ Noise Levels

The summary of results in **Table 25** show that ambient day, evening and night time LA10 noise levels recorded for the quarter ending June 2008 were generally similar to or less than levels recorded during the baseline monitoring process at locations E and K. An increase in LA10 noise level of 6 dBA has occurred at Location F during the night. Operator attended noise surveys at this location noted that the LA10 noise levels were dominated by local traffic and not from Donaldson mine activity.

A comparison of the current monitoring period (June 2008) with the previous monitoring period (March 2008) shows that LA10 noise levels were generally similar to or less than levels recorded at Location F. A significant decrease in noise level was recorded at Location K during the evening (7 dBA) and night (12 dBA).

A comparison of the current monitoring period (June 2008) with the coinciding monitoring period last year (June 2007) indicates that LA10 noise levels during all periods were equal to or less than those recorded at Location K. No comparison can be made to noise levels at Location F due to a noise logger fault in the June 2007 monitoring period.

Wednesday 27th August 2008 – Tuesday 2nd September 2008 (September quarter)

Table 26 presents a comparison between the noise statistics collected during the September 2008 quarter unattended continuous survey and the pre-mining baseline statistics.

TABLE 26: Unattended Continuous Monitoring Ambient Noise Levels, SEPTEMBER 2008 MONITORING PERIOD.

Location	Period	L_{A1}	L_{A10}	L_{Aeq}	L_{A90}
A Weakleys Drive Beresfield	**Daytime**	No Data	No Data	No Data	No Data
	Evening	No Data	No Data	No Data	No Data
	ENCM Daytime	No Data	No Data	No Data	No Data
	Night	No Data	No Data	No Data	No Data
C 28 Phoenix Drive	**Daytime**	52	42	30	52
	Evening	42	35	30	41
	ENCM Daytime	51	41	30	46
	Night	40	35	26	42
F Lot 684 Black Hill Road, Black Hill	**Daytime**	65	55	42	56
	Evening	59	52	44	52
	ENCM Daytime	65	55	40	55
	Night	56	50	42	51
K Bartter Farm No.6	**Daytime**	56	53	41	53
	Evening	56	52	42	52
	ENCM Daytime	57	53	41	52
	Night	57	52	42	54

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am, Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night 10.00 pm to 7.00 am.

Ambient LA_{90} Noise Levels

The summary of results in **Table 26** show that ambient day, evening and night time LA90 noise levels recorded for the quarter ending September 2008 were significantly less than levels recorded during the baseline monitoring process at Location E. Significant increases of 9 dBA, 11 dBA and 7 dBA were respectively recorded in the evening and night-time periods at Location F and the night-time period at Location K. Given observations made during operator attended noise surveys, it is likely that the rise in noise levels was caused by increase in traffic volumes and insect/cricket/frog activity and not from Donaldson Mine activity.

A comparison of the current monitoring period (September 2008) with the previous monitoring period (June 2008) shows that LA90 noise levels have significantly reduced at Location E but have remained generally similar at Location F. A significant increase of 5 dBA was recorded in the night-time period at Location K which is likely to have been caused by an increase in insect/cricket/frog activity and not from Donaldson Mine activity.

A comparison of the current monitoring period (September 2008) with the coinciding monitoring period last year (September 2007) indicates that LA90 noise levels recorded during all periods at locations F and K were generally similar, except during the night where respective increases of 5 dBA and 12 dBA occurred at Locations F and K. Given observations made during operator attended

noise surveys, it is likely that the variance in noise levels was caused by local traffic and insect/cricket/frog activity and not from Donaldson Mine. Given that Location E was not monitored in the September 2007 monitoring period no comparison can be made to noise levels.

Ambient LA_{10} Noise Levels

The summary of results in **Table 26** show that ambient day, evening and night-time LA10 noise levels recorded for the quarter ending September 2008 were significantly less than levels recorded during the baseline monitoring process at Location E. Ambient day, evening and nighttime LA10 noise levels at locations F and K were generally similar to levels recorded during the baseline monitoring process with the exception of a slight increase of 4 dBA during the daytime at Location F. Operator attended noise surveys at this location (Location F) noted that the LA10 noise levels were dominated by local traffic and not from Donaldson mine activity.

A comparison of the current monitoring period (September 2008) with the previous monitoring period (June 2008) shows that LA10 noise levels were generally similar to or less than levels recorded at Locations E, F and K. A slight increase (3 dBA) in noise level was recorded at Location K during the night.

A comparison of the current monitoring period (September 2008) with the coinciding monitoring period last year (September 2007) indicates that LA10 noise levels during all periods were within 2 dBA of those recorded at Locations F and K. Given that Location E was not monitored in the September 2007 monitoring period no comparison can be made to noise levels.

Results of Attended Surveys

Monday 10th December and Thursday 20th November 2007

Operator attended noise measurements were conducted during the daytime time period on Monday 10 December 2007 and for the evening and night time periods on Thursday 20 December 2007.

The results of the operator attended noise measurements are given in **Tables 27 to 30**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations. Mine contributions listed in the tables are from Donaldson Mine and are stated only when a contribution could be quantified.

TABLE 27: ATTENDED SURVEY RESULTS – LOCATION A - 98 WEAKLEYS DRIVE BERESFIELD.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
10/12/07 10:51 am Day W = Calm Temp = 26°C	Ambient	70	62	56	52	55	Traffic noise dominant (Weakleys Drive); Cars ~ 47-53, Trucks ~ 62-64 Birds/insects ~ 52 – 54 Nail Gun ~ 56-58 Donaldson mine inaudible.
20/12/07 8:36 pm Evening W = 1-2 m/s SE Temp = 23°C	Ambient	70	66	61	57	59	Traffic noise dominant (Weakleys Drive); Passing cars to 59. Passing trucks to 67. Crickets/insects ~ 52 Operator Noise 70 Donaldson mine inaudible.
20/12/07 10:12 pm Night W = Calm Temp = 23°C	Ambient	66	63	60	56	59	Traffic noise dominant (Weakleys Drive); Passing cars to 58 Passing trucks to 63 Insects/crickets ~ 50-53 Donaldson mine inaudible.

TABLE 28: ATTENDED SURVEY RESULTS – LOCATION C – PHOENIX DRIVE

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
10/12/07 11:11 am Day W = 2-3 m/s SE Temp = 27°C	Ambient	83	76	66	47	64	Rooster ~ 69 Distant traffic noise (F3) ~ 50 - 52. Wind in Trees ~ 47-48 Operator noise ~ 82 Donaldson mine inaudible.
20/12/07 8:50 pm Evening W = 1-2 m/s SE Temp = 23°C	Ambient	61	55	45	42	46	Distant traffic noise (F3) ~ 43 - 46. Passing Car - 62 Insects /crickets/frogs ~ 38 - 40
20/12/07 10:36 pm Night W = 1-2 m/s SE Temp = 23°C	Ambient	59	51	48	44	46	Distant traffic (F3) ~ 41 - 43 Insects/crickets/frogs~ 44-4652 Wind in Trees ~ 44 Donaldson mine inaudible.

TABLE 29: ATTENDED SURVEY RESULTS - LOCATION F – LOT 684 BLACK HILL RD, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
10/12/07 11:55 am Day W = 2 m/s SE Temp = 24°C	Ambient	75	67	54	43	54	Traffic (JohnRenshaw Drive) Cars to 54 Trucks to 64 Birds/insects ~ 45-48 Wind in Trees ~ 44-47 Car pass-by ~ 71 Donaldson mine inaudible.
20/12/07 9:42 pm Evening W = 1- 2 m/s SE Temp = 23°C	Ambient	79	56	48	45	52	Traffic (John Renshaw Dr); Passing cars ~ to 55. Crickets /insects/frogs (dominant) ~ 48-50 Car pass-by ~ 71 Donaldson mine ; Truck horn and engine noise approximately LA10 of 38
20/12/07 11:21 pm Night W = Calm Temp = 23°C	Ambient	78	63	49	41	53	Traffic (John Renshaw Dr); Passing cars ~ to 52. Crickets /insects/frogs (dominant) ~ 47-50 Truck pass-by 81 Donaldson mine ; Truck horn and engine noise approximately LA10 of 38

TABLE 30: ATTENDED SURVEY RESULTS – LOCATION K –BARRTER ENTERPRISES FARM 6, BLACK HILL.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
10/12/07 11:36 am Day W = 3 m/s SE Temp = 24°C	Ambient	89	68	58	46	59	Distant traffic ~ 48-51. Cars 48-51 Birds/Insects ~ 48-50 Wind in Trees ~ 45-46 Donaldson mine inaudible.
20/12/07 9.20 pm Evening W = 1-2 m/s SE Temp = 23°C	Ambient	94	80	39	48	70	Passing cars to 83. Passing Trucks 94 Insects/crickets ~ 48-50 Donaldson mine inaudible
20/12/07 10:59pm Night W = Calm Temp = 23°C	Ambient	93	81	67	47	69	Passing cars to 85. Passing Trucks to 93 Insects /crickets ~ 46 - 50 Donaldson mine: truck engine noise and truck horns audible Approx. LA10 Contribution ~ 56

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as insect and frog noise. Donaldson Mine operations were observed to be audible at Location K (Bartter) and Location F (Lot 684 Black Hill Road) during the night. Black Hill Roads' quantified LA10 contribution is approximately 38 dBA which meets the consent limit for this location. Condition 23 of schedule 2 of the consent is currently operable at the Bartter Farm site and henceforth an agreement is in place for the receiver to accept higher noise levels. Furthermore, the dwelling on the Bartter Farm site is currently unoccupied and therefore determining whether consent is achieved at this site is unnecessary. Therefore attended noise surveys conducted with relevance to Location K have been used to assess noise levels at nearest occupied residential receivers to the Bartter Farm site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the recorded mine contribution to be approximately 38 - 40 dBA at these residential locations which is in compliance with Donaldson Mine consent.

In conclusion, based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine do not exceed noise emission goals for any period.

Tuesday 11th March and Thursday 13th March 2008

Operator attended noise measurements were conducted during the day on Tuesday 11 March 2008 and the evening and night-time periods on Thursday 13 March 2008. The results of this survey are presented in **Tables 31-34.** Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations. Mine contributions listed in the tables are from Donaldson Mine and are stated only when a contribution could be quantified.

TABLE 31: ATTENDED SURVEY RESULTS – (LOCATION A) 98 WEAKLEYS DRIVE, BERESFIELD

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
11/03/08 9:43 am Day W = Calm **Temp = 25oC**	Ambient	69	62	56	50	54	Traffic noise dominant (Weakleys Drive); Cars ~ 52-56. Trucks Impact Noise ~ 60-64 Birds ~ 50 Dog Bark ~ 46 Operator noise - 69 **Donaldson mine inaudible.**
13/03/08 7:35 pm Evening W = Calm **Temp = 20oC**	Ambient	64	60	57	49	54	Traffic noise dominant (Weakleys Drive); Cars ~ 52-56. Trucks ~ 60 - 62 Crickets/Insects ~ 46 Truck brake squeal **Donaldson mine inaudible.**
13/03/08 10:17 pm Night W = Calm **Temp = 19oC**	Ambient	59	56	51	46	49	Traffic noise dominant (Weakleys Drive); Passing cars to 54. Passing trucks to 61 Insects ~ 46-48 **Donaldson mine inaudible.**

TABLE 32: ATTENDED SURVEY RESULTS – (LOCATION C) 28 PHEONIX RD, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
11/03/08 10:10 am Day W = 2-3 m/s SE **Temp = 25oC**	Ambient	63	58	52	42	48	Chickens ~ 45 Distant traffic noise (F3) ~ 44 Neighbourhood activities 63 Birds ~ 48 **Donaldson mine inaudible.**
13/03/08 8:05 pm Evening W = Calm **Temp = 20C**	Ambient	56	52	51	47	49	Distant traffic noise (F3) ~ 44-48 Insects/crickets (dominant) ~ 43-45 Car (Pheonix Drive) 56 Dog bark ~ 49 **Donaldson mine inaudible.**
13/03/08 10:41m Night W = Calm **Temp = 19oC**	Ambient	53	49	47	44	45	Distant traffic (F3) ~ 40-47 Insects ~ 39 Birds ~ 42 Distant truck brakes ~ 46 **Donaldson mine inaudible.**

TABLE 33: ATTENDED SURVEY RESULTS – (LOCATION F) LOT 684 BLACK HILL ROAD, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
11/03/08 11:16 pm Day W = 2 m/s SE **Temp = 25oC**	Ambient	78	68	55	44	55	Traffic (John Renshaw Drive); Cars to 52-55 Trucks to 70 Birds/Insects ~ 42 Car pass-by 78 **Donaldson mine inaudible.**
13/03/08 8:50 pm Evening W = Calm **Temp = 20oC**	Ambient	63	58	53	50	52	Traffic (John Renshaw Drive); Passing cars ~ to 53 Passing trucks to 60 Crickets/insects/frogs (dominant) ~ 46-48 **Donaldson mine inaudible.**
13/03/08 11:27 pm Night W = Calm **Temp = 19oC**	Ambient	68	55	49	43	47	Traffic (John Renshaw Drive); Passing cars ~ 47 Crickets/insects/frogs (dominant) ~ 43 Truck pass-by 56 Operator noise 68 Sheep 47 **Donaldson mine inaudible.**

TABLE 34: ATTENDED SURVEY RESULTS – (LOCATION K) BARRTER ENTERPRISES FARM 6, BLACK HILL.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
11/03/08 10:45 am Day W = 3 m/s SE **Temp = 25oC**	Ambient	57	54	50	43	47	Traffic (John Renshaw Drive); Cars 56-51 Trucks 52-55 Birds/Insects ~ 45 Truck break squeal 57 **Donaldson mine inaudible.**
13/03/08 8:27 pm Evening W = Calm **Temp = 20oC**	Ambient	87	79	66	47	68	Passing cars up to 83 Passing truck 87. Crickets /insects/frogs ~ 46-48 **Donaldson mine;** Trucks engine noise; truck horns and reverse alarms audible; **Approx L_{A10} contribution ~ 48.**
13/03/08 11:01 pm Night W = Calm **Temp = 19oC**	Ambient	94	81	66	45	70	Passing cars to 78 Passing truck 94 **Donaldson mine;** Trucks engine noise; truck horns and reverse alarms audible; Overburdon dump into empty ruck ~ 46-47 **L_{A10} contribution ~ 42-43.**

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as insect and frog noise. Donaldson Mine operations were observed to be audible at Location K (Bartter) during the evening and night. Condition 23 of schedule 2 of the Donaldson Mine consent is currently operable at the Bartter Farm site with an agreement in place for the receiver to accept higher noise levels. However, the dwelling on the Bartter Farm site is currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Bartter Farm site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution was approximately 30 - 32 dBA at these residential locations which is in compliance with Donaldson Mine consent.

In conclusion, based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine do not exceed noise emission goals for any period.

Tuesday 11th June and Monday 23rd June 2008

Operator attended noise measurements were conducted during the daytime period on Tuesday 11th June 2008. Operator attended noise measurements for evening and night-time periods were conducted on Monday 23rd June 2008.

The results of the operator attended noise measurements are given in **Tables 35-38**. Noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations. Mine contributions listed in the tables are from Donaldson Mine and are stated only when a contribution could be quantified.

TABLE 35: ATTENDED SURVEY RESULTS – (LOCATION A) 98 WEAKLEYS DRIVE, BERESFIELD.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
11/06/08 12:45 am Day W ~ Calm Temp = 18oC	Ambient	64	59	55	48	53	Traffic noise dominant (Weakleys Drive) Cars ~ 52-56 Trucks to 64 Birds ~ 50 General Farm Noise < 48 **Donaldson mine inaudible.**
23/06/08 7:50 pm Evening W = Calm Temp = 16oC	Ambient	65	60	56	51	54	Traffic noise dominant (Weakleys Drive) Cars ~ 55-58 Trucks to 62-65 Birds ~ 50 Insects/Crickets < 51 **Donaldson mine inaudible.**
28/05/07 10.10 pm Night W = Calm Temp = 13oC	Ambient	60	58	51	44	49	Traffic noise dominant; (Weakleys Drive) Passing cars to 54, Passing trucks to 60. Insects/crickets ~ 40-42. **Donaldson mine inaudible.**

TABLE 36: ATTENDED SURVEY RESULTS – (LOCATION C) 28 PHOENIX RD, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
11/06/08 –1:32 am Day W = Calm Temp = 18oC	Ambient	63	54	44	36	43	Distant Traffic noise ~ 38-40 Car pass-by 63 Neighbour activities 52 Birds ~ 42-45 **Donaldson mine inaudible.**
23/06/08 8:46 pm Evening W = Calm Temp = 16oC	Ambient	83	66	48	42	55	Distant traffic noise~ 38. Insects/crickets ~ 40 Truck movements (neighbouring property) 60-64 Dog barks~ 50. Truck pass-by 83 **Donaldson mine inaudible.**
23/06/08 10:54 pm Night W = Calm Temp = 13oC	Ambient	57	45	41	34	37	Distant traffic ~ 35 Insects/crickets/frogs ~ 34 - 36. Distant truck noise (not from Donaldson Mine) ~ 34-36. Operator Noise 57 **Donaldson mine inaudible.**

TABLE 37: ATTENDED SURVEY RESULTS – (LOCATION F) LOT 684 BLACK HILL ROAD, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
11/06/08 2:05 am Day W = Calm Temp = 18oC	Ambient	76	68	59	50	57	Traffic (John Renshaw Dr) cars to ~54-56. trucks to 69. Birds <50. Car pass-by 76 **Donaldson mine inaudible.**
23/06/08 9:11 pm Evening W = Calm Temp = 16oC	Ambient	58	54	50	45	48	Traffic (John Renshaw Dr) Passing cars ~ to 55. Passing trucks to 58. Crickets/insects/frogs (dominant) ~ 44-46. **Donaldson mine inaudible.**
23/06/08 10:58 pm Night W = Calm Temp = 16oC	Ambient	58	53	49	42	46	Traffic (John Renshaw Dr) Passing cars~ 52 Passing truck to 58 Crickets/insects/frogs ~ 40-42. Dog Bark <42 Distance mine truck noise (Donaldson Mine) ~38-40. **Donaldson mine inaudible.**

TABLE 38: ATTENDED SURVEY RESULTS – (LOCATION K) BARRTER ENTERPRISES FARM 6, BLACK HILL.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
11/06/08 1:09 am Day W = Calm Temp = 18oC	Ambient	64	58	53	43	50	Traffic (John Renshaw Drive);; cars 46-51, trucks 52-55 Birds/insects ~ 45. **Donaldson Mine; inaudible.**
23/06/08 8:17 pm Evening W = Calm Temp = 16oC	Ambient	89	77	67	48	69	Passing cars up to 80. Passing truck 89. Crickets/insects/frogs < 48 **Donaldson Mine;** Truck engine noise and reverse alarms audible. **Approx LA10 Contribution ~ 47**.
23/06/08 11:31 pm Night W = Calm Temp = 13oC	Ambient	88	79	68	46	67	Passing cars to 79. Passing truck to 88. **Donaldson Mine;** Truck engine noise and reverse alarm audible; **Approx. LA10** Contribution ~ 47

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise. Donaldson Mine operations were observed to be audible at Location K (Bartter) during the evening and night. Condition 23 of schedule 2 of the Donaldson Mine consent is currently operable at the Bartter Farm site with an agreement in place for the receiver to accept higher noise levels. However, the dwelling on the Bartter Farm site is currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Bartter Farm site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution was approximately 31 dBA at these residential locations which is in compliance with Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine do not exceed noise emission goals for any period.

Wednesday 27th August - Tuesday 9th September 2008

Operator attended noise measurements were conducted on Wednesday 27th August 2008 (daytime), Monday 8th September 2008 (evening) and Tuesday 9th September 2008 night-time).

The results of the operator attended noise measurements are given in **Tables 39 to 42**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations. Mine contributions listed in the tables are from Donaldson Mine and are stated only when a contribution could be quantified.

TABLE 39: ATTENDED SURVEY RESULTS – LOCATION A - 98 WEAKLEYS DRIVE BERESFIELD.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
27/08/08 12.45 pm Day W = 1-2m/s SE Temp = 19°C	Ambient	76	62	57	50	55	Traffic noise dominant (Weakleys Drive); Cars ~ 50-54, Trucks to 64. Birds ~ 51-60 Vegetation ~ 50-58 Resident noise ~ 52-58 **Donaldson mine inaudible.**
8/09/08 7:45 pm Evening W = <1m/s SE Temp = 13°C	Ambient	71	67	58	53	55	Traffic noise dominant (Weakleys Drive); cars ~ 53-58, trucks to 65. Crickets/insects < 52. **Donaldson mine inaudible.**
9/09/08 6:43 am Night W = Calm Temp = 8°C	Ambient	72	68	64	55	59	Traffic noise dominant (Weakleys Drive); cars to 53-55, passing trucks to 58. Insects/crickets ~ 53-55. **Donaldson mine inaudible.**

TABLE 40: ATTENDED SURVEY RESULTS – LOCATION C- Browns Road, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
27/08/08 1:33 pm Day W = 1-2m/s SE Temp = 18°C	Ambient	74	54	42	34	44	Vegetation ~ 36-44 Neighbour activities ~ 48 Birds ~ 37-45 **Donaldson mine inaudible.**
8/09/08 6:56 pm Evening W = 1 m/s SE Temp = 12°C	Ambient	71	50	44	40	45	Distant traffic noise ~ 40-41 Insects/crickets ~ 40-45 Frog ~ 47-49 **Donaldson mine inaudible.**
9/09/08 6:25 am Night W = Calm Temp = 8°C	Ambient	61	54	48	34	44	Distant traffic ~ 35 Crickets/insects/frogs ~ 37-39 **Donaldson mine inaudible.**

TABLE 41: **ATTENDED SURVEY RESULTS – LOCATION F – LOT 684 BLACK HILL ROAD, BLACK HILL**

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
27/08/08 1:10 pm Day W = 1-2m/s SE Temp = 12°C	Ambient	73	62	53	42	52	Traffic (John Renshaw Dr); Cars to 50-54 Trucks to 60. Birds ~ 50-56 Cow ~ 51 Car pass-by 71 **Donaldson mine inaudible.**
8/09/08 6:33 pm Evening W = 1m/s SE Temp = 12°C	Ambient	81	74	51	46	59	Traffic (John Renshaw Dr); cars ~ 47-51 Trucks ~ 52-54. Crickets/insects/frogs (dominant) ~ 46-48. **Donaldson mine inaudible.**
9/09/08 6:03 am Night W = Calm Temp = 8°C	Ambient	88	83	66	47	69	Traffic (John Renshaw Dr); Cars ~ 51-53, Passing cars ~ 80-88 Crickets/insects/frogs (dominant) ~48. **Donaldson Min inaudible**;

TABLE 42: **ATTENDED SURVEY RESULTS – LOCATION K BARRTER ENTERPRISES FARM 6, BLACK HILL.**

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels LAmax – dBA
		LAmax	LA1	LA10	LA90	LAeq	
27/08/08 1:55 pm Day W = 1-2 m/s SE Temp = 18°C	Ambient	77	56	50	44	50	Traffic (John Renshaw Drive); cars 44-51, trucks to 54. vegetation ~ 44 birds ~ 44-47 **Donaldson mine inaudible.**
8/08/08 7:24 pm Evening W = 1 m/s SE Temp = 12°C	Ambient	94	84	74	49	73	Traffic (John Renshaw Drive); Passing cars up to 84. Passing truck 94. **Donaldson mine** Truck engine noise 51-52 Approx. LA10 Contribution ~ 45
9/09/08 5:42 am Night W = Calm Temp = 8°C	Ambient	93	88	83	63	78	Traffic (John Renshaw Drive); Passing cars to 87. Passing trucks to 93. Birds ~ 63-65 **Donaldson Mine inaudible;**

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as cricket, insect and frog noise during the evening and night-time measurements. Donaldson Mine operations were observed to be audible at Location K (Bartter) during the evening. Condition 23 of schedule 2 of the Donaldson Mine consent is currently operable at the Bartter Farm site with an agreement in place for the receiver to accept higher noise levels.

However, the Bartter Farm site is currently unoccupied and therefore determining whether consent is achieved at this location is unnecessary. Attended noise surveys conducted with relevance to Location K have therefore been used to assess noise levels at nearest occupied residential receivers to the Bartter Farm site in the Black Hill area.

To determine whether compliance is achieved, the mine contribution recorded at location K has been used to calculate the contribution to the nearest residential receivers in Black Hill. This calculated contribution was then compared to the Black Hill consent limit. Calculations found that the mine contribution was approximately 30 dBA at these residential locations which is in compliance with Donaldson Mine consent.

Based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine do not exceed noise emission goals for any period.

In conclusion, based on the results and observations from operator attended surveys, contributed noise levels from Donaldson Mine do not exceed noise emission goals for any period.

Complaints Based Noise Monitoring

There was one complaints based noise monitoring event during the 2008 AEMR reporting period. This was conducted at 190 Black Hill Rd Black Hill in response to a residents concerns.

Attended Survey - Thursday 10th April 2008

Operator attended noise measurements were conducted during the day, evening and night-time periods on Tuesday 10th April 2008. The results of this survey are presented in **Table 43.** Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations. Mine contributions listed in the tables are from Donaldson Mine and are stated only when a contribution could be quantified.

TABLE 43: ATTENDED SURVEY RESULTS – LOCATION 190 BLACK HILL RD, BLACK HILL.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission and Typical Maximum Levels L_{Amax} – dBA
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
10/04/08 10:43 pm Night W = Calm **Temp = 16oC**	Ambient	54	45	43	39	41	Trck at John Renshaw ~ 41-42, Bat ~ 42-50 Frogs (constant) ~ 38-41. **Donaldson mine audible:** Truck horn 45-51 Truck noise ~ 44-45. Lulls when plant not or barely audible ~ 38
10/04/08 11:07 pm Night W = Calm **Temp = 16oC**	Ambient	52	46	44	39	42	Truck at John Renshaw Dr ~ 41 – 42 Bat ~ 42-50 Frogs (constant) ~ 38-41. **Donaldson mine audible:** Truck horn 43-52 Truck noise ~ 47-49 Dozer ~ 47.

10/04/08 11:32 pm Night W = Calm **Temp = 16oC**	Ambient	53	45	43	39	41	Goose ~45 Frogs (constant) ~ 39-45. **Donaldson mine audible:** Truck horn 43-48 Truck noise ~ 47

Local noise generated by insects, frogs, birds and bats was a significant contributor to noise levels at the monitoring location. These natural noise sources dominated the LA90 noise descriptor but also influenced the LAeq and LA10 descriptors. Donaldson Mine operations, primarily trucks, were observed to be audible during all three (3) measurements. Donaldson Coal Mines' quantified LA10 contribution was determined to be approximately 39 dBA to 40 dBA. Although this contributed level is marginally above the consent limit of 38 dBA a 2 dBA tolerance is normally allowed for field measurements. This is supported by the INP section 11.1.3 which states "A development will be deemed to be in non-compliance with noise consent or licence condition if the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition".

The Donaldson Coal Mine consent does not include criteria for sleep disturbance, however, on some occasions noise levels from truck horns may result in the potential for sleep disturbance as associated noise levels approach 15 dBA above the background noise level.

In conclusion, based on the results and observations from operator attended surveys and the nature of the consent conditions, contributed noise levels from Donaldson Mine are deemed to comply with the consent during the night-time period.

Unattended Survey - Thursday 10th April 2008

An Acoustic Research Laboratory (ARL) Ngara-S-Pack (S/N 200003) environmental noise logger was deployed on Friday 4 April 2008 at 190Blackhill Rd Blackhill, and retrieved on Thursday 10 April 2008. Results are provided in **Table 44**.

TABLE 44: Unattended Continuous Monitoring Ambient Noise Levels, 190- Black Hill Rd Blackhill – April 2008

Location	Period	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}
190 Black Hill Rd Black Hill	**Daytime**	55	49	34	47
	Evening	54	47	37	48
	ENCM Daytime	55	48	34	46
	Night-time	45	41	35	41

Note: EPA periods used for the Industrial Noise Policy (INP) are defined as Daytime – 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm to 10.00 pm; Night-time - 10.00 pm to 7.00 am, Monday to Saturday, 10.00 pm to 8.00 am Sunday.
EPA Periods used for the Environmental Noise Control Manual (ENCM) Daytime 7.00 am to 10.00 pm, Night-time 10.00 pm to 7.00 am.

Ambient LA90 Noise Levels

The summary of results in **Table 44** show that average ambient night-time LA90 noise levels recorded for the monitoring period was 35 dBA. The attended noise survey results (Table 2) identified that the LA90 noise descriptor is dominated by frog and insect noise. As such during winter months when insect/cricket/frog activity is not prominent the ambient noise levels (represented by the LA90 descriptor) would expect to be lower.

Ambient LA10 Noise Levels

The summary of results in **Table 44** show that average ambient night-time LA10 noise levels recorded for the monitoring period was 41 dBA. This value is slightly lower than the LA10 obtained during the attended monitoring. This lower value is most likely due to fact that the mine was not operating throughout the entire night-time period and/or frog and insect noise was not as prominent.

3.2.12 Visual and Stray Lighting

Impacts on visual amenity were identified as one of the issues for residents in the Black Hill area during the EIS process. To date there have not been any complaints related to visual impact issues received by the mine. This includes complaints relating to stray lighting.

Control Strategy:

Visual impact is controlled by ensuring that (where possible) the waste emplacement dumps are shielded by the natural topography and trees. Once areas become available, rehabilitation commences as soon as possible to ensure that the visibility of the dumps is reduced.

To this end, the out of pit dump has deliberately been constructed at an appropriate RL to ensure that it cannot be seen from the Black Hill area.

Environmental Performance:

Visual impact and stray lighting is not considered an issue for the Donaldson Coal at the moment. Should it become an issue appropriate controls would be adopted to minimise any impacts.

3.2.13 Cultural and Natural Heritage Conservation

The following section outlines the commitment made by Donaldson to the protection of cultural and natural heritage of the area. A copy of a plan along with a summary table showing the known Aboriginal Cultural heritage sites is attached as **Appendix 3** of this report.

To date thirty-one sites of Aboriginal Cultural Heritage have been identified on property owned by Donaldson Coal. None of these sites were in areas that were impacted on by mining during the 2008 AEMR period.

Archaeological Studies

Donaldson Coal has been the subject of four archaeological studies since 1998. During each study the principle aims have been to:

a) Consult and involve the Aboriginal Community at every stage of the investigation and to provide continuous opportunities for the Aboriginal Community (through the MLC) to participate in the interpretation and decision making process.

b) Identify and record by field survey the material evidence of Aboriginal cultural heritage or locations of potential evidence with the land owned by Donaldson.

c) Assess the archaeological significance and understand the Aboriginal significance of material evidence of Aboriginal cultural heritage of the study area.

d) Assess the impacts of the mine on Aboriginal Cultural Heritage.

Management Plans

In accordance with conditions 84, 85 and 86 of the Development Consent, Donaldson Coal has prepared an Aboriginal Sites Management Plan for the mine. Separate plans are produced for each year of operation at the mine. This provides a better opportunity to address specific issues for each year as well as an opportunity to review and address the management of Aboriginal Sites both inside the mine impact area and within associated conservation areas surrounding the mine.

An Aboriginal Sites Management Plan for Year 5 was prepared in consultation with the Mindaribba Local Aboriginal Land Council (MLC) and has been submitted to the National Parks and Wildlife Service.

Control Strategy:

The following control measures have been employed at the Donaldson Coal Mine in order to ensure that reasonable duty of care is taken to ensure sites of aboriginal cultural significance are not knowingly disturbed or destroyed:

a) The MLC is actively involved in the management of Aboriginal Sites at Donaldson;

b) Representatives of the Lands Council are invited on site to monitor clearing and topsoil stripping activities.

Environmental Performance:

Donaldson and MLC enjoy a good working relationship and to date there have been no complaints or incidents recorded in relation to the management of sites of aboriginal cultural heritage.

3.2.14 Spontaneous Combustion

Donaldson has not experienced spontaneous combustion in any of its stockpiles or in the coal seams in the pit itself.

Control Strategy:

Notwithstanding this, the potential for spontaneous combustion is controlled as follows:

- ROM and product coal stockpiles are expected to be of small size and of limited turnaround time;
- Currently the bulk of the coal is pre-sold and as such is not required to be stockpiled for periods longer than two (2) months;
- The pit geologist is responsible for inspecting coal stockpile areas and reporting any evidence of obvious heating or spontaneous combustion;
- Coal stockpiles will be sprayed with water, particularly in hot, dry weather;
- Care is taken to ensure coal stockpiles are established in clear, open areas where the threat from bushfire is minimal;
- Should coal on the stockpile begin to combust, it will be removed using earthmoving equipment readily available at the mine and quenched using the sprays from the water cart; and

- Should occurrences become frequent, stockpiles will be shaped and compacted as required to minimise spontaneous combustion.

Where the decision is made to spoil thin coal seams the pit geologist is responsible for making the contractor aware of the possibility for spontaneous combustion and is to ensure that the material is placed over a dump face where it will be buried.

Environmental Performance:

There have been no recorded incidents of spontaneous combustion during the reporting period.

3.2.15 Bushfire

A Bushfire Management Plan was prepared in 2004 for the areas owned by Donaldson Coal. This includes both those areas to be disturbed by mining activities and the area set-aside as conservation areas. The management plan was submitted to the NSW Rural Fire Service (RFS) for review and part of the review involved a site inspection by the RFS. The Cessnock/Maitland Bushfire Management Committee ratified the Bush Fire Management Plan for the Donaldson Coal site at its meeting in October 2006. The Bushfire Management Plan takes into consideration the requirement for hazard reduction burns, natural fire regime and the need to maintain the ecological value of the site for flora and fauna.

Control Strategy:

Cooks Construction operates a 38,000L water cart for dust suppression on site. The water cart is fitted with a monitor (spray) which can be used as required to control fires on site. In addition, earthmoving equipment can be provided at short notice to construct fire breaks or access.

No hazard burn reduction was undertaken during the 2008 AEMR period. Hazard reduction will be considered in the next AEMR reporting period as determined by the Bushfire Management Plan and the advice of the local RFS office. The program will maintain reduced fuel loading and protect mine assets and adjoining private properties.

A 20m fuel free and 15m fuel reduced zone has been established around the Donaldson Coal administration office in accordance with the requirements of the Cessnock City Council.

Care is to be taken to ensure fires (both those lit accidentally or deliberately) are kept out of areas that have been recently revegetated. Fire management trails will be established to provide access into these areas as well as fire breaks should they be required. In addition, care will be taken to keep fire out of the active pit area, or run of mine stockpiles and overburden emplacement areas. This is to ensure that the risk of any carbonaceous material catching alight is kept to an absolute minimum.

Environmental Performance:

There were no reported fires on Donaldson Coal property during the period of this report.

3.2.16 Mine Subsidence

Mine subsidence is not considered an issue at Donaldson Coal Mine because the mine is by open cut methods only.

3.2.17 Public Safety

Donaldson has fenced the eastern and southern boundaries of the mining lease, which are the most accessible to the public.

Sign-posting advising the public of the presence of the mine have been placed at the entrance and around the perimeter of the lease. The fences are inspected on a weekly basis and repairs undertaken where necessary.

3.3 REPORTABLE INCIDENTS

There was one externally reportable environmental incidents recorded at the mine during the reporting period. A Blast was undertaken by Cook's Construction's sub contractor Downer EDI Mining Blasting Services, on Saturday 19th July 2008 as part of normal operations by Cook's at the Donaldson Coal Open Cut mine.

The monitor at the nearest residence recorded an overpressure of 122.0 db (10:05 hrs). The duration of the blast was 1.5 seconds and the exceedance was measured at 140 milliseconds. The blast was observed by the Environmental Manager (Donaldson Coal), Mine Manager (Cooks), and Shot Firer (Downer EDI Mining Blasting Services) and showed no signs of concern such as rifling or blow outs. The blast was also video taped as part of normal monitoring and has been reviewed with no visible signs of a blow out. Photographs taken from the video are enclosed.

No complaints were received as a result of the blast.

A review of the blast results was undertaken by Adrian Moore of Terrock Consultant Engineering Pty Limited who are specialists in blast design and results. A review of the blast was also undertaken by Cook's Contracting and Downer EDI Mining Blasting Services.

Mr. Moore concludes that the high level was wavefront reinforcement due to the use of 9 ms delays along parallel rows. The evidence that led to this conclusion was the reinforcement diagraph and characteristic airblast wave shape.

Mr. Moore recommended the avoidance of 9 ms delays in a 3.5m x 3.5 pattern.

A copy of Mr. Moore's report has been provided to the blast sub-contractor Downer EDI Mining Blasting Services to ensure that the recommendations are followed.

The recommendations were incorporated in a subsequent blast on the 25 July 2008 which resulted in no exceedances of overpressure at the nearest residence and is now part of site procedures

There were two (2) internal environmental incidents reported as a requirement of the Environmental Management Strategy, compared to the 2007 reporting period where one (1) internally reportable environmental incident were recorded. **Table 45** shows the nature of those incidents.

TABLE 45: LIST OF INTERNAL ENVIRONMENTAL INCIDENTS REPORTED.

Nature of the Incident	Number Recorded
Filling up fuel tank - overflow of 1,000 litres within the bunded area.	1
Using horns on excavators after dark instead of flashing lights.	1

An internal environmental incident form was completed in accordance with the requirements of the site Environmental Management Strategy (EMS). These forms enable preventative actions to be suggested and the recommendations implemented in order to continually improve environmental performance at the mine. The Donaldson Coal Environmental Manager is working with the mining contractor to address area(s) of repeat incidents.

4 COMMUNITY RELATIONS

This section details the various aspects of the community relations program at the mine, including but not limited to, complaints received on the community hotline, community liaison, detail on the Community Consultative Committee (CCC) and the social and economic benefits resulting from the presence of the mine in the area.

4.1 ENVIRONMENTAL COMPLAINTS

There were eleven (11) complaints received by Donaldson Coal on the 1800 111 271 community hotline during the 2008 AEMR reporting period, with one (1) received in the previous AEMR reporting period. The complaints were in relation to blast (3) and noise (8) impacts, and information about the complaints is provided in **Appendix 4**. All complaints are followed up and remedial or additional monitoring was undertaken as required. This included additional noise monitoring in the Blackhill area (refer **section 3.2.11**).

4.2 COMMUNITY LIAISON

The following section relates specifically to information relevant to the Community Consultative Committee (CCC) and the community liaison program implemented by the mine.

4.2.1 Community Consultative Committee (CCC).

There was one CCC meeting held at the Donaldson Mine site during the 2008 AEMR reporting period. Included in **Table 46** are the details of the CCC meeting held during the reporting period.

TABLE 46: CCC MEETING DETAILS

Date	Location	No. of attendees
24th September 2008	Donaldson Coal	7

4.2.2 Site Tours/Inspections

Members of the CCC inspected the mine following the meeting held in 2008 AEMR period. Donaldson proposes to continue site inspections when required by the CCC so the CCC members can see the operation first hand.

4.2.3 Community Newsletters

There were no community newsletters prepared in the 2008 AEMR reporting period, however a Community Noticeboard has been established on the Donaldson Coal Internet Site which has proven to be successful and is the preferred avenue for communicating information about the mining operations to the local community and any other interested parties.

4.2.4 Donaldson Coal Internet Site (www.doncoal.com.au)

The Donaldson Coal Internet site was launched in August 2000. It has since been reviewed and improved, with additional information and a site upgrade in August 2004. The site has been developed to provide information to the wider community. It contains up to date copies of the CCC meeting minutes, a Community Noticeboard, Donaldson news and updates, the most recent Environmental Monitoring Report, pictures of the mine and

general information. It also contains a list of contact details should anyone wish to contact the mine directly either by telephone or e-mail.

4.3 SOCIAL/ECONOMICAL CONTRIBUTIONS

This section details the employment status and demographics for all staff employed both directly and indirectly at the Donaldson Coal Mine. It is important to note that Donaldson operates only a day and afternoon shift roster for overburden and interburden removal. Coal removal is undertaken on all shifts (including night shift). Should the option to operate overburden and interburden on a night shift be taken up, the employee numbers would increase.

4.3.1 Employment Status and Demography

Donaldson Coal directly employs or contracts 10 staff mainly within a technical services and management/supervision role. **Table 47** shows the breakdown of numbers for key functional areas as well as the percentage living in the Maitland Area.

TABLE 47: SUMMARY OF DONALDSON COAL EMPLOYEE STATISTICS

Functional Area:	No.	Place of Residence
Management	3	Maitland (33%), Other (66%)
Environmental	1	Other (100%)
Technical Services	6	Maitland (50%), Other (50%)

Cooks Construction Pty Ltd currently directly employs 69 full-time employees in the production, maintenance and management areas. **Table 48** shows the breakdown of numbers for key functional areas as well as the percentage living in the Maitland Area.

TABLE 48: SUMMARY OF COOKS CONSTRUCTION EMPLOYEE STATISTICS

Functional Area:	No.	Place of Residence
Management/Supervisor	9	Maitland (44%), Other (56%)
Maintenance/Production	60	Maitland (32%) Other (68%)

In addition to those directly employed by either Donaldson or Cooks Construction there are a large number of additional sub contractors employed indirectly at the project. They include, but are not limited, the following areas:

a) Coal Haulage (Daily);

b) Coal Handling and Washing (Daily);

c) Maintenance contractors and fitters (Daily as required);

d) Cleaning staff;

e) Other consultants and contractors (as required).

4.3.2 Roll-on Employment Effects

The initial studies undertaken as part of the EIS detailed the importance of the coal mining industry to the economy of New South Wales. Donaldson Coal mine came on stream during a period where some of the mines in the upper valley were downsizing and offering

redundancies. This has enabled a number of skilled workers an opportunity that may have otherwise not been available.

In addition there has been the roll on effect. The EIS used a multiplier (3.09) derived from the Australian Bureau of Statistics in order to calculate the roll on benefit of the operation. Based on the current numbers of direct employees (day and afternoon shift) it could be expected that up to the equivalent of an additional 244 jobs have been created as a result of the project taking place.

4.3.3 Value Adding Programs Directly Benefiting the Community

Donaldson Coal has also made a number of contributions to the local community. Donaldson has undertaken the following activities during the reporting period.

- Donaldson continues to be the major sponsor of an education initiative for local primary schools in the Maitland and surrounding area aimed at providing teaching resource aids, placing the local Maitland Mercury (newspaper) in Classrooms;
- Small financial contributions have been made to various local community based organisations in the area surrounding the mine.
- Donaldson has provided an avenue for training and employment for five individuals from the local Mindaribba Aboriginal Lands Council; and

5 REHABILITATION

This section describes the current rehabilitation activities during the reporting period at the Donaldson Coal Mine.

5.1 BUILDINGS

There were no changes to site buildings during this reporting period.

5.2 REHABILITATION OF DISTURBED LAND

It is proposed to re-establish a cover of native forest vegetation to the majority of the post-mining landform.

During the reporting period a total of 20.19 hectares were rehabilitated including the provision of drainage controls to provide a stable landform in line with MOP requirements.

5.2.1 Management of Potentially Acid Material

In late 2003 a final report was provided by URS Australia Pty Limited on the management of potentially acidic material. In line with the recommendations, the out of pit dump was limed. A copy of the report was submitted to MR and the final recommendations are implemented in rehabilitation practices. During the 2008 AEMR reporting period all areas of rehabilitation were treated following the recommendations of the URS report.

Actions undertaken during the 2008 AEMR period included the continued selective use of the top 7 meters of the upper overburden and interburden strata for capping over the dump areas.

5.3 OTHER INFRASTRUCTURE

Other than those already mention in this report, there was some other infrastructure works undertaken during the reporting period. These works included the following:

- Routine maintenance of the fence along John Renshaw Drive
- Drains were cleaned out and repaired on the eastern rehabilitated areas.
- A drain was constructed through the rehabilitated areas.

All works were undertaken in accordance with the requirements of the approved MOP.

5.4 REHABILITATION STATUS AT END OF THE REPORTING PERIOD

The principal areas for rehabilitation are the two emplacement areas outside of the active mining area. These are known as the Top Dump, in the northern area of the mine, and the Out of Pit Emplacement, in the southern area of the mine. Due to the progression of mining operations less area was available in this AEMR reporting period due to the Top Dump not reaching final landform.

Approximately 20.19 Ha of rehabilitation was completed in this 2008 AEMR reporting period with a rehabilitation area of 48.65 a planned for 2008-2009. The area rehabilitated in 2007-8 was less than the projected MOP target due to the incomplete sections of the final landform in the Top Dump. The rehabilitation report for 2008 is provided in **Appendix 7**. The latest rehabilitation plan, October 2008, and the forecast plan for October 2009 are provided in **Appendix 8**.

There is a small depression on the long dump that is a purpose built detention structure. This dam has been clay sealed to prevent percolation of runoff through the dump. The Draft DLWC *Draft Guidelines of establishing Stable Drainage Lines on Rehabilitated Mine site (1999)* promotes temporary detention runoff on spoil dumps as a means of reducing velocity and discharge off site.

An excellent result from direct tree seeding areas has been obtained by incorporating direct tree seeding with cover crops. This prevents weed growth, provides faster ground stabilisation, less soil erosion and sedimentation issues and has produced good uniform germination of all tree and shrub species. This technique will be continued at Donaldson Coal.

In 2008, the overburden material will continue to be placed in the dumps in a method that is commensurate with the final landform design. The design will minimise the final trim works required to achieve the designed post mining landform. Drainage control and erosion protection measures are being incorporated into the final landform design. This includes, but is not limited to, contour and graded banks, drains and sediment retention basins. Slopes are generally regraded to no greater than 10 degrees. Areas available for rehabilitation will be topsoiled and immediately seeded to reduce the risk of soil erosion.

The runoff from the Out of Pit Emplacement area is currently being collected and pumped to the dirty water dam due to the mining out of the creek tributaries.

5.5 REHABILITATION TRIALS AND RESEARCH

In mid 2005 Donaldson mine initiated a field research program incorporating world first biotechnology examining the natural enhancement of drought resistance in native tree species. The research was initiated by Mark Burns of Global Soil Systems and was enthusiastically supported by Donaldson Mine.

The technology centers on the treatment of young trees with a threshold concentration of a naturally occurring plant compound, by treating tubestock and seed with citric acid. Glasshouse trials at Newcastle University and the University of British Columbia, Canada showed dramatic improvement in both fine root development and the ability of trees to reduce water loss when subject to drought stress. Preliminary results at Donaldson Mine confirmed these findings and support the possible wider use of this technology in rehabilitation, forestry, agriculture and any plant group where enhanced drought resistance in plants may be beneficial.

5.6 FURTHER DEVELOPMENT OF THE FINAL REHABILITATION PLAN

Donaldson Coal recognises the need to manage rehabilitation of the Open Cut to ensure that the mine can function effectively and operate in accordance with statutory requirements. To this end Donaldson engaged Global Soil Systems (GSS) to prepare a Rehabilitation Management Plan (RMP) in accordance with the coal mining industry's best practice.

The report aims to specifically address rehabilitation in three (3) key areas including pre-mining operations (eg. clearing, seed collection, topsoil management, etc) post mining operations (eg. landform design, visual impact slope angles, water management and revegetation, etc) and mine closure and decommissioning (including but not limited to final void issues).

The rehabilitation strategies and concepts proposed for Donaldson Mine were formulated according to results of industry wide research and experience. All future site and industry research results will be utilised as input into a "cycle of continuous improvement" so that rehabilitation best practice is implemented at the site.

6. ACTIVITIES PROPOSED IN THE NEXT AEMR PERIOD

The following initiatives by Donaldson Coal are proposed over the next twelve months.

- A new drain will be constructed in the eastern area following rehabilitation of the open cut.

7. DEVELOPMENT CONSENT COMPLIANCE REVIEW

An Independent Environmental Audit of the Donaldson Coal Mine was conducted between the 11 and 13 April 2007 by the consulting company, Trevor Brown and Associates, to review the compliance of the Donaldson Coal Mine operations with the Minister's Conditions of Consent granted on the 14 October 1999, and the conditions attached to the Notice of Modification granted by the Minister for Planning on 26 August 2005. This compliance review and Audit was required as part of the Conditions of Consent.

The compliance review and Audit was conducted generally in accordance with the Australian/New Zealand Standards AS/NZS ISO 14010:2004 - Guidelines and General Principles for Environmental Auditing; and AS/NZS ISO 14011:2004 – Procedures for Environmental Auditing. The files held by Donaldson Coal at the mine site and interview/discussions with the site personnel provided the auditor with all the required information and documentation for the verification of compliance of the operations with the conditions of approval and other statutory approvals.

A summary of the findings contained in the Independent Environmental Audit Report were:

"The audit findings confirmed a high degree of compliance with the requirements of the conditions attached to the Minister's Conditions of Consent, Environment Protection Licence and Mining Lease.

The preparation of documentation, reporting and operations of the Donaldson Mine demonstrate compliance with the conditions in relation to the activities and operations on the Mining Lease Area.

The status and availability of documentation held by Donaldson that was required to verify actions related to each condition of consent, provided the auditor with adequate information to undertake the audit in an efficient manner."

8. REFERENCES

- Global Soil Systems (May 2000a) ***Erosion & Sediment Control Plan,*** Unpublished report for Donaldson Coal Pty Ltd.
- Holmes Air Sciences (October 2007) ***Air Quality Management Plan***, Unpublished report for Donaldson Coal Pty Ltd.
- Perrens Consultants (November 2000) ***Water Management Plan***, Unpublished report for Donaldson Coal Pty Ltd.
- Robyn Tuft & Associates (2008) ***Donaldson Coal Mine Macroinvertebrate Sampling program Operations Survey***: Autumn ***2008,*** Unpublished report for Donaldson Coal Pty Ltd.
- Gunninah (July 2007) ***Donaldson Open-cut Coal Mine, Beresfield, Flora and Fauna Management Plan.*** Unpublished Report for Donaldson Coal Pty Ltd.
- Gunninah (December 2000a) ***Donaldson Open-cut Coal Mine, Tetratheca juncea Management Plan.*** Unpublished Report for Donaldson Coal Pty Ltd.
- Gunninah (December 2000b) ***Donaldson Open-cut Coal Mine Tetratheca juncea survey and identification report,*** Unpublished Report for Donaldson Coal Pty Ltd.
- Global Soil Systems (2000b) ***Donaldson Coal Waste Management Plan***, Unpublished report completed by Donaldson Coal.
- Richard Heggies & Associates Pty Ltd (2007) ***Noise Monitoring Survey, Fourth Quarter 2007, Donaldson Mine***, Unpublished reported completed by Donaldson Coal
- Richard Heggies & Associates Pty Ltd (2008a) ***Noise Monitoring Survey, First Quarter 2008, Donaldson Mine***, Unpublished reported completed by Donaldson Coal
- Richard Heggies & Associates Pty Ltd (2008b) ***Noise Monitoring Survey, Second Quarter 2008, Donaldson Mine***, Unpublished reported completed by Donaldson Coal
- Richard Heggies & Associates Pty Ltd (2008c) ***Noise Monitoring Survey, Third Quarter 2008, Donaldson Mine***, Unpublished reported completed by Donaldson Coal
- EcoBiological ***The Experimental Translocation of Tetratheca juncea (tremandraceae) at Donaldson Coal Mine, Beresfield*** *(2007)*, Unpublished report for Donaldson Coal Pty Ltd
- Hunter Eco ***Relocation of Grevillea parviflora subsp. Parviflora,*** *Donaldson Open Cut Mine (2007),* Unpublished report for Donaldson Coal Pty Ltd

APPENDIX 1:

Donaldson Coal
Environmental Policy

Donaldson

Donaldson Coal Pty Ltd
ABN 87 073 088 945

ENVIRONMENTAL POLICY

Donaldson Coal recognises that it is operating in an environment that requires a genuine commitment to the environment. Donaldson aims to achieve and maintain a high standard of environmental care within all aspects of the operation.

Donaldson will achieve this by committing to the following principles:

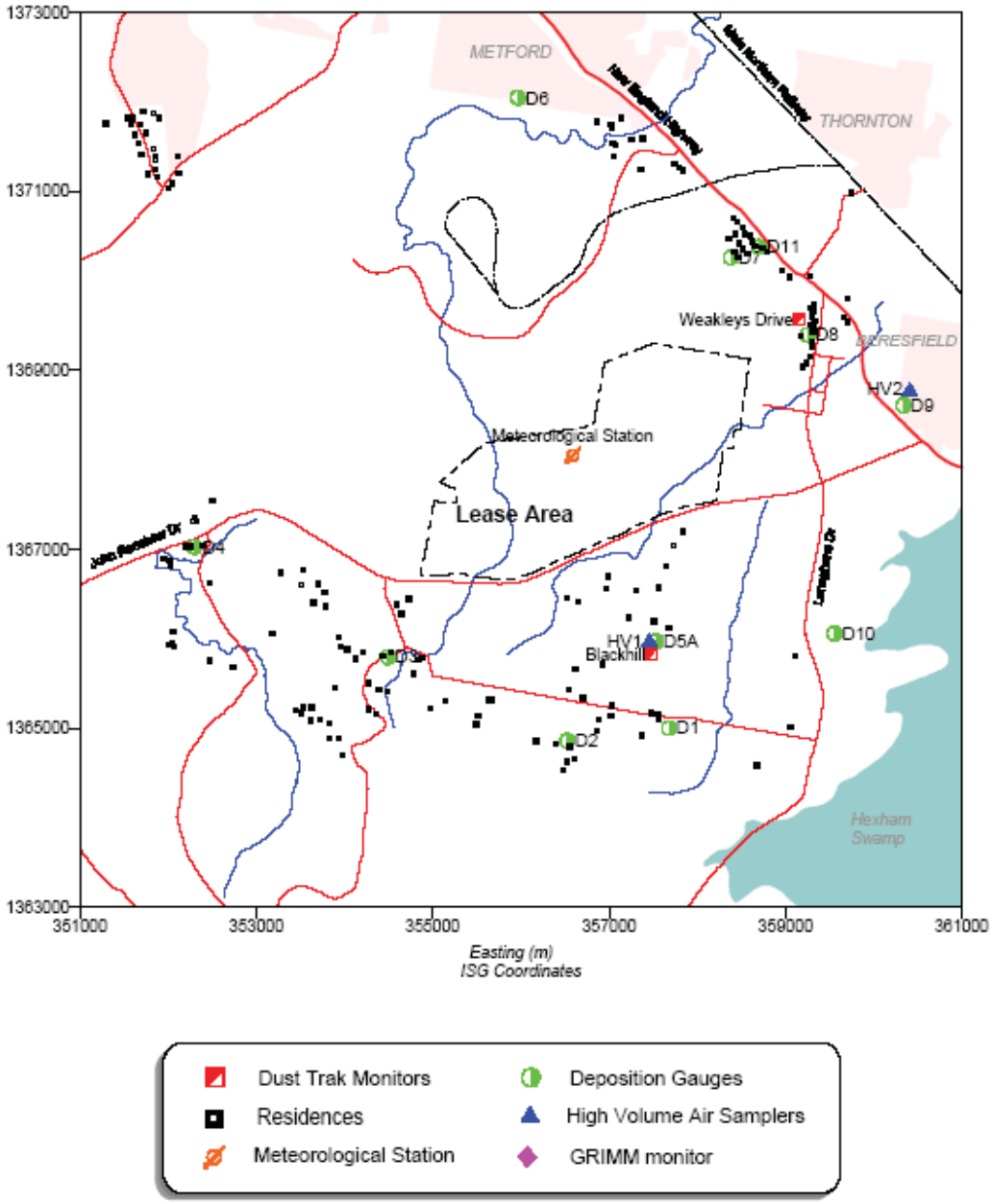
- Compliance with all laws, regulations, consent conditions and standards applicable to the operation.
- Adopting a consultative approach and communicating openly with all stakeholders on the environmental issues;
- Ensuring that all employees, contractors and suppliers of goods and services are fully aware of their responsibilities by initiating regular communications and training;
- Always considering environmental factors when planning or making operational decisions or changes to the mining process;
- Ensuring continuous improvement through implementing and maintaining an Environmental Management Strategy (EMS) which aims to identify, control and monitor the environmental risks arising from the project;
- To develop, maintain and review environmental objectives, targets and performance indicators; and
- Managing all operational processes to minimise wastes, promote reuse and recycling principles so as to reduce the impacts upon the surrounding environments.

BRENDAN McPHERSON
Chief Executive Officer – Donaldson Project.

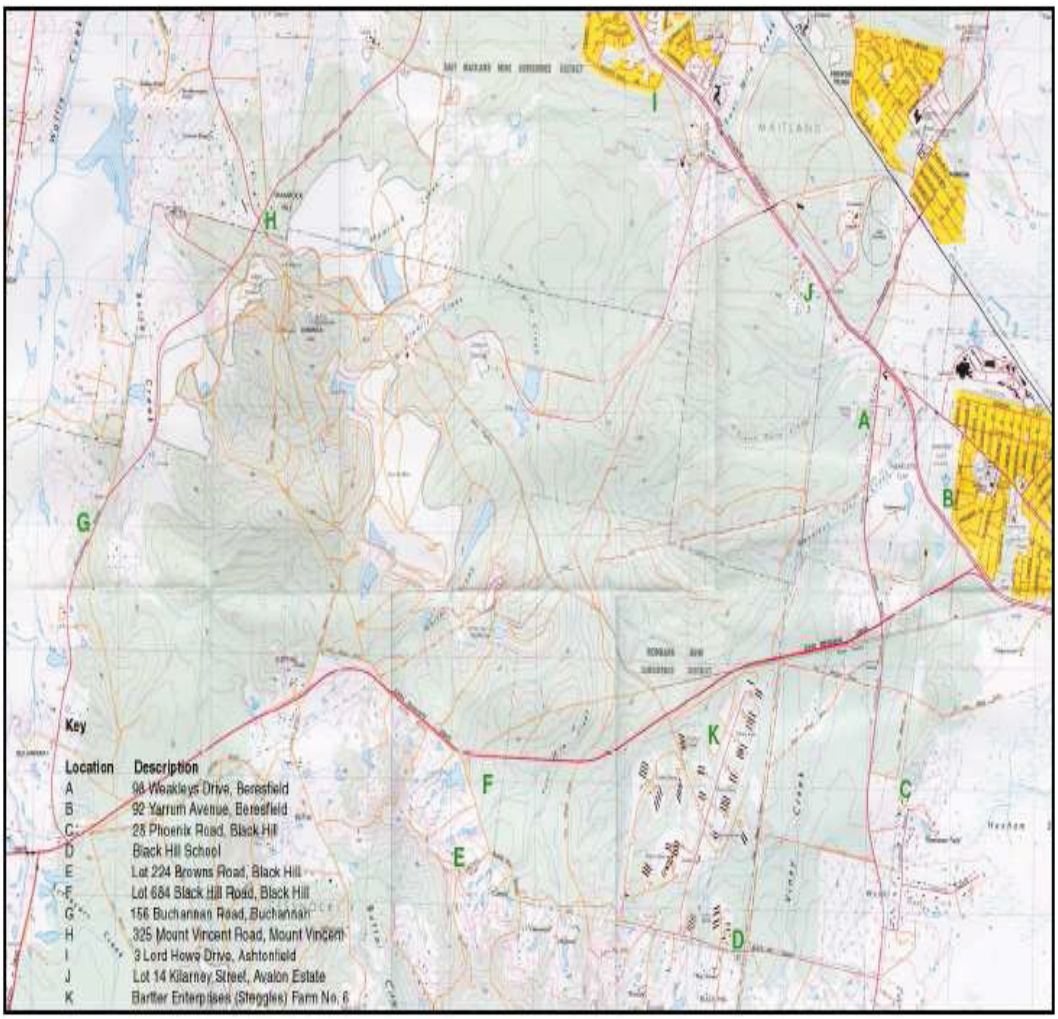
SEPTEMBER 2000.

APPENDIX 2:

Site Locality Plan and Monitoring Locations



Locations of Air Pollution Monitoring Equipment.



Locations of Noise Monitoring Equipment during the 2008 AEMR period.

APPENDIX 3:

Description and Location Plan of known Aboriginal Sites

Aboriginal Sites Within the Donaldson Mine Lease Area

Site Name	Recorder	Location	Description	Comments
Bushland Conservation Area				
FMC3	Effenberger (1997)	368300E 6368900N Bank of Four Mile Creek	Artefact scatter (5 artefacts), one axe grinding groove	
FMC4	Effenberger (1997)	368250E 6368650N Lower slope above Four Mile Creek	Artefact scatter (2 artefacts)	
FMC5	Effenberger (1997)	368500E 6368700N Lower slope above Four Mile Creek	Artefact scatter (2 artefacts)	
FMC6	Effenberger (1997)	368400E 6366100N Upper slope above Four Mile Creek	Artefact scatter (4 artefacts)	
FMC7	Effenberger (1997)	367600E 6366500N Crest between Four Mile Creek and a major tributary	Artefact scatter (3 artefacts)	
FMC8	Effenberger (1997)	367600E 6366850N Upper slope above tributary of Four Mile Creek	Scarred tree	
WFC1	Effenberger (1997)	371200E 6369200N Lower slope above Weakleys Flat Creek	Artefact scatter (3 artefacts)	
ISF3	Umwelt (1998)	368750E 6367650N Lower slope above Four Mile Creek	Isolated find	
ISF4	Umwelt (2001)	370550E 6368625N Mid slope above Weakleys Flat Creek	Isolated find	
Four Mile Creek 1 (38-4-139)	Brayshaw (1985)	368130E 6367020N Bank of Four Mile Creek	Artefact scatter (19 artefacts)	

Four Mile Creek 2 (38-4-140)	Brayshaw (1985)	367820E 6366880N Terrace of Four Mile Creek	Artefact scatter (10 artefacts)	
CA1	Umwelt (2001)	370658E 6368051N Mid slope, south of Weakleys Flat Creek	Isolated find	
CA2	Umwelt (2001)	371132E 6369039N Lower slope, north west of Weakleys Flat Creek	Artefact scatter (2 artefacts)	
CA3	Umwelt (2001)	370985E 6370511N Lower slope above a tributary of Scotch Dairy Creek	Isolated find	
CA4	Umwelt (2001)	369568E 6370040N Mid slope above Scotch Dairy Creek	Isolated find	
CA5	Umwelt (2001)	368391E 6366747N Mid slope, east of Four Mile Creek	Isolated find	
CA6	Umwelt (2001)	368229E 6366592N Lower slope above a tributary of Four Mile Creek	Isolated find	
CA7	Umwelt (2001)	367617E 6366456N Mid slope above Four Mile Creek	Isolated find	
CA8	Umwelt (2001)	370746E 6369747N Lower slope, south of Scotch Dairy Creek	Isolated find	
DMS2	Umwelt (2002)	370966E 6368184N Mid slope, south of Weakleys Flat Creek	Artefact scatter (2 artefacts)	
DMS4	Umwelt (2002)	368649E 6368181N Mid slope, east of Four Mile Creek	Isolated find	

DMS5	Umwelt (2002)	370665E 6368177N Mid slope, south of Weakleys Flat Creek	Isolated find	
DMS6	Umwelt (2002)	370809E 6369721N Mid slope, south of Scotch Dairy Creek	Scarred tree	
Mine Impact Area				
ISF1	(Effenberger 1997)	370500E 6369100N Lower slope above small tributary of Weakleys Flat Creek	Isolated find	Consent to Destroy granted (2002)
ISF2	(Effenberger 1997)	369800E 6368950N Lower slope above tributary of Weakleys Flat Creek	Isolated find	Consent to Destroy granted (2002)
ISF5	Umwelt (2001)	370275E 6368626N Mid slope above Weakleys Flat Creek	Isolated find	Application being prepared for consent to remove
ISF6	Umwelt (2001)	370305E 6368600N Mid slope above Weakleys Flat Creek	Isolated find	Application being prepared for consent to remove
Ironbark 2 (38-4-339)	Ruig (1993)	369190E 6367890N Upper slope above tributary of Weakleys Flat Creek	Isolated find	
DMS1	Umwelt (2002)	369734E 6369122N	Isolated find	Consent to Destroy granted (2002)
DMS3	Umwelt (2002)	369090E 6367962N Mid slope above Four Mile Creek	Isolated find	

APPENDIX 4:

List of Complaints Received by the Mine

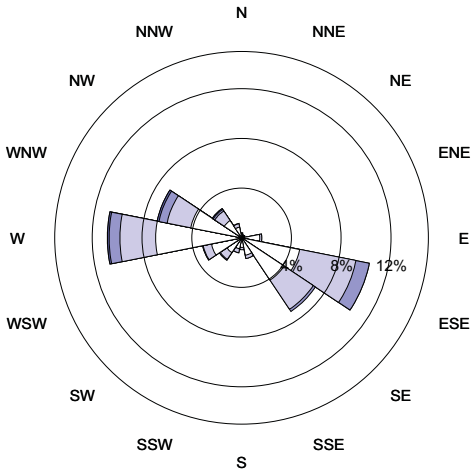
SUMMARY OF COMPLAINTS RECEIVED BY DONALDSON COAL (in the 2007/08 AEMR reporting period)

Number	Location	Date of Complaint	Time	Description	Actions/ Outcomes
53	Blackhill	22/02/2008	11:47	Blasting	Blast shook house and rattled windows.
54	Blackhill	25/02/2008	22:04	Noise	Noise from excavator horn keeping complainant awake.
55	Blackhill	27/02/2008	8:40	Noise	Reversing alarms and noise from horn.
56	Blackhill	18/03/2008	6:59	Noise	Noise from excavator horn keeping complainant awake.
57	Blackhill	19/03/2008	11:44	Blasting	Blast shook house.
58	Blackhill	2/04/2008	8:59	Noise	Noise from excavator horn, rat-a-tat noise, dropping material on ground.
59	Blackhill	13/05/2008	09.23	Noise	Noise from mine audible at residence.
60	Blackhill	14/05/2008	17.25	Noise	Noise from horns being used on site.
61	Blackhill	16/07/2008	8.34	Noise	Noise from horns being used on site.
62	Blackhill	21/07/2008	16.37	Noise	Noise from horns being used on site.
63	Blackhill	29/10/2008	11.41	Blasting	Blast shook house. Monitor at residence was 112.4 dB and 0.317mm/s.

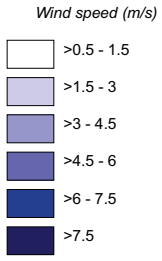
APPENDIX 5:

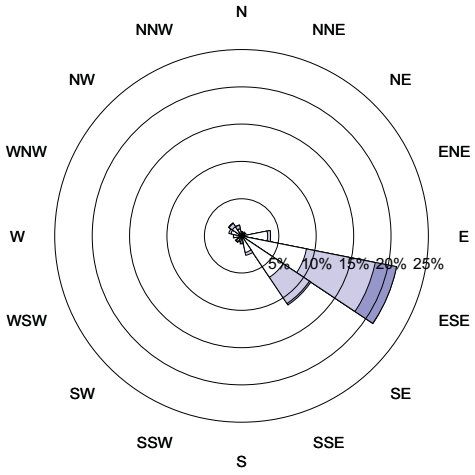
Wind Speed & Direction (Windrose) Diagrams for the reporting period.

Annual and seasonal windroses for Donaldson (Nov 2007 to Oct 2008)

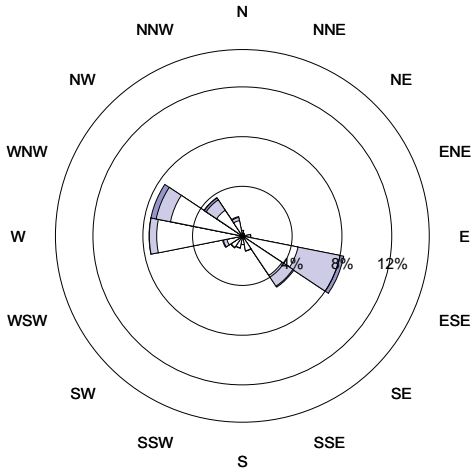


Annual
Calms = 48.8%

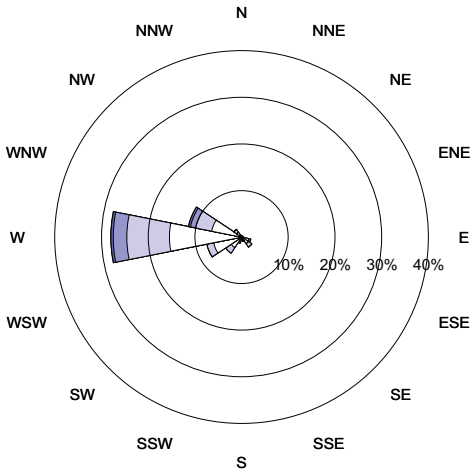




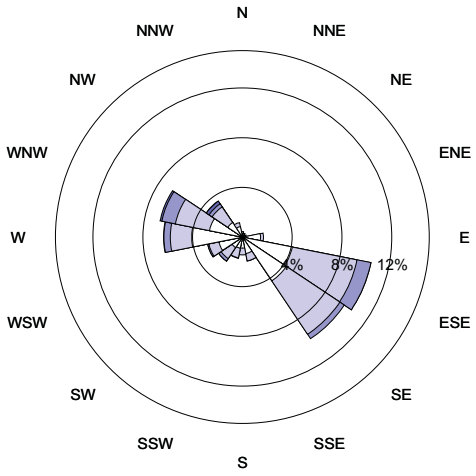
Summer
Calms = 49.2%



Autumn
Calms = 59.1%

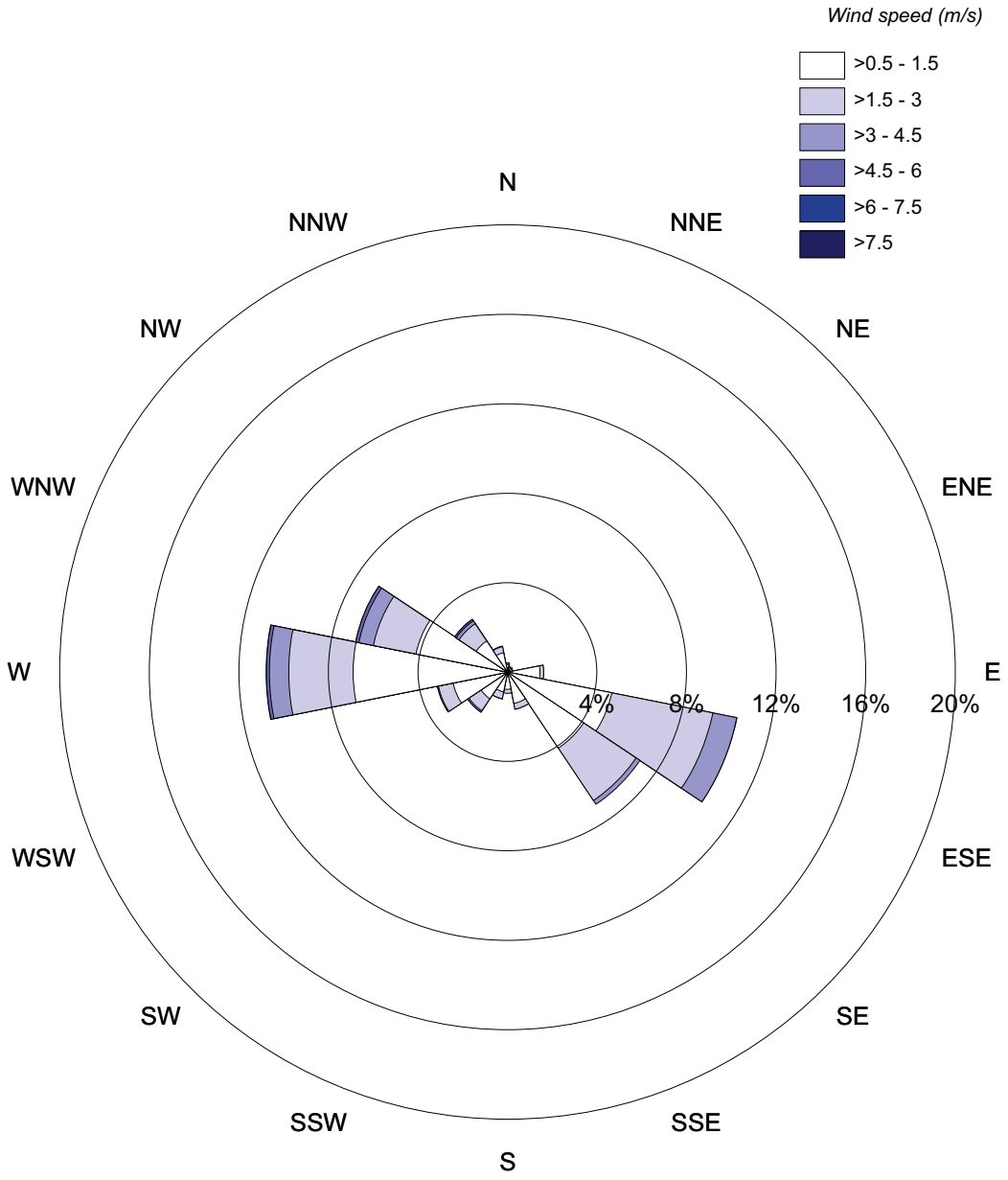


Winter
Calms = 38.1%



Spring
Calms = 48.7%

Windrose for Donaldson
November 2007 to October 2008



Calms = 48.8%

APPENDIX 6:

Newsletter

(There were no newsletters produced in this monitoring period)

APPENDIX 7:

Annual Rehabilitation Report

TABLE: REHABILITATION SUMMARY

		Cumulative Area Affected (hectares)			
		To date	Last report	Next Report (estimated)	
A:	**MINE LEASE AREA**				
A1	**Mine Lease(s) Area**	532.8			
B:	**DISTURBED AREAS**				
B1	**Infrastructure area** (other disturbed areas to be rehabilitated at closure including facilities, roads)	38.63	41.04	38.63	
B2:	**Active Mining Area** (excluding items B3 – B5 below)	26.57	31.55	28.82	
B3	**Waste emplacements**, (active/unshaped/in or out-of-pit)	28.32	37.51	12.66	
B4	**Tailings emplacements,** (active/unshaped/uncapped)	0	0	0	
B5	**Shaped waste emplacement** (awaits final vegetation)	53.63	45.38	20.64	
ALL DISTURBED AREAS		**147.15**	**155.48**	**100.75**	F1
C	**REHABILITATION PROGRESS**				
C1	**Total Rehabilitated area** (except for maintenance)	122.97	102.78	171.62	F2
D:	**REHABILITATION ON SLOPES**				
D1	**10 to 18 degrees**	0	0	0	
D2	**Greater than 18 degrees**	0	0	0	
E:	**SURFACE OF REHABILITATED LAND**				
E1	**Pasture and grasses**	0	0	0	
E2	**Native forest/ecosystems**	122.97	102.78	171.62	
E3	**Plantations and crops**	0	0	0	
E4	**Other** (include nonvegetative outcomes)	0	0	0	

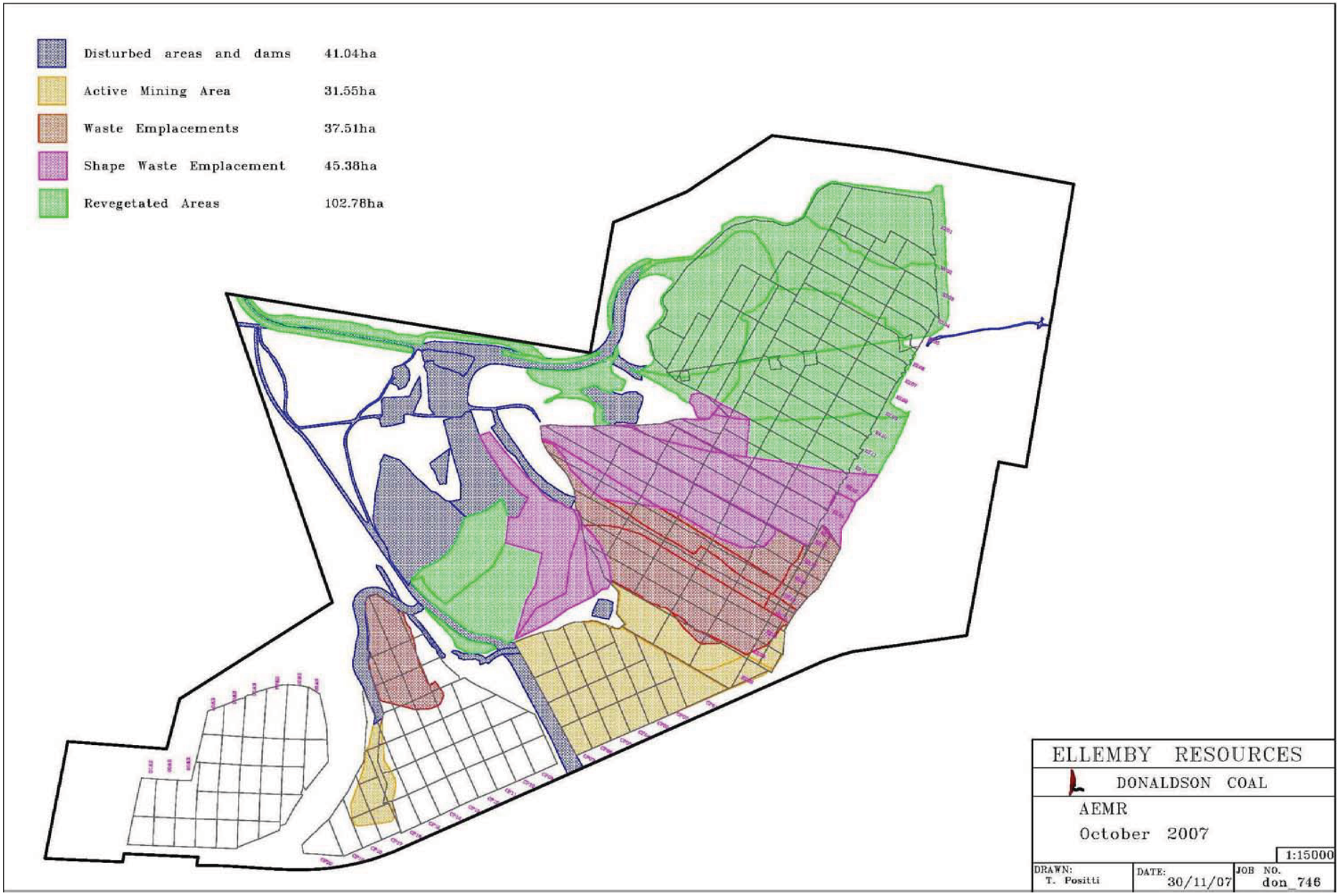
TABLE: **MAINTENANCE ACTIVITIES ON REHABILITATED LAND**

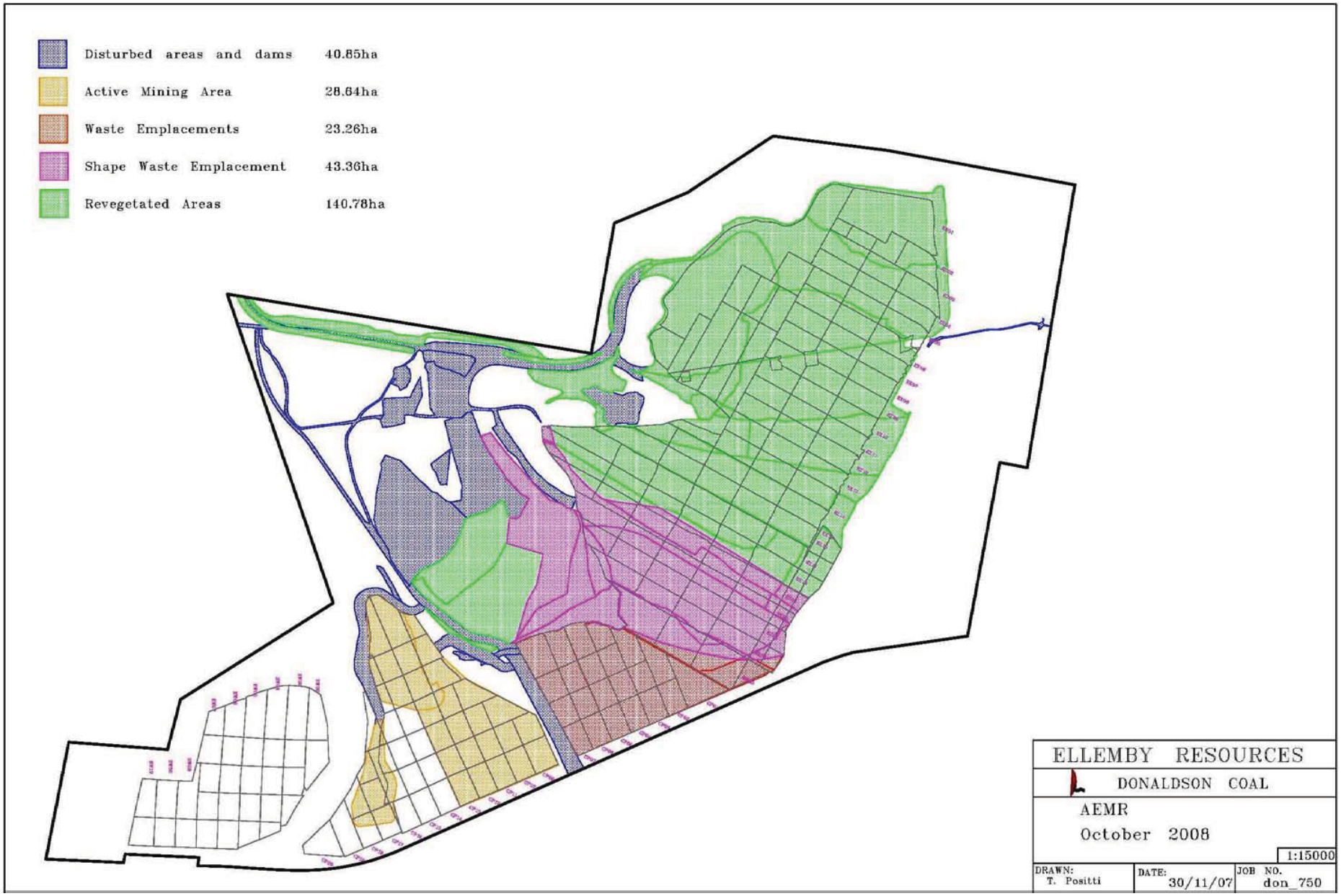
(This period's activities and activities proposed in the next reporting period)

NATURE OF TREATMENT	Area Treated (ha)		Comment/control strategies/ treatment detail
	Report period	Next period	
Additional erosion control works (drains re-contouring, rock protection)	0	0	
Re-covering (detail - further topsoil, subsoil sealing etc)	0	0	
Soil treatment (detail - fertiliser, lime, gypsum etc)	0	0	• Lime has been added to areas along the haul road batters and the out of pit dump as part of the AMD Management Plan protocols. • The addition of lime will continue to be a "short term" strategy to control isolated "hot spots" as required (as per URS recommendations).
Treatment/Management (detail – grazing, cropping, slashing etc)	0	0	
Re-seeding/Replanting (detail – species density, season etc)	0	0	
Adversely Affected by Weeds (detail - type and treatment)	0	0	
Feral animal control (detail – additional fencing, trapping, baiting etc)	0	0	

APPENDIX 8:

Rehabilitation Plans


Disturbed areas and dams 41.04ha
Active Mining Area 31.55ha
Waste Emplacements 37.51ha
Shape Waste Emplacement 45.38ha
Revegetated Areas 102.78ha
ELLEMBY RESOURCES
DONALDSON COAL
AEMR
October 2007
1:15000
DRAWN: T. Positti
DATE: 30/11/07
JOB NO. don_746


Disturbed areas and dams 40.85ha
Active Mining Area 28.64ha
Waste Emplacements 23.26ha
Shape Waste Emplacement 43.36ha
Revegetated Areas 140.78ha
ELLEMBY RESOURCES
DONALDSON COAL
AEMR
October 2008
1:15000
DRAWN: T. Positti
DATE: 30/11/07
JOB NO. don_750