



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 2010 to 31st October 2011

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



Part of Gloucester Coal

DONALDSON COAL MINE

Annual Environmental Management Report (AEMR) 2010-2011

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Location:	

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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 2010 to 31st October 2011.

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 2011, approximately 11,741,158 tonnes of coal has been railed to both Hunter Valley power stations and international customers, through the Port of Newcastle. Mining was conducted under long term contract with Cooks Construction Pty Ltd (Cooks) until Donaldson coal became the Operator on the 2nd February, 2009. 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	<ul style="list-style-type: none"> A copy of the mining lease is available for review at the Donaldson Coal office.
Mining Operations Plan	1/06/2006	1/06/2012	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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		<ul style="list-style-type: none"> 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)	18/4/2009	17/04/14	<ul style="list-style-type: none"> Issued to cover groundwater extraction as a result of the active mining area.
Water Works Licence (No. 20BL168124)	1/08/09	31/07/12	<ul style="list-style-type: none"> 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.

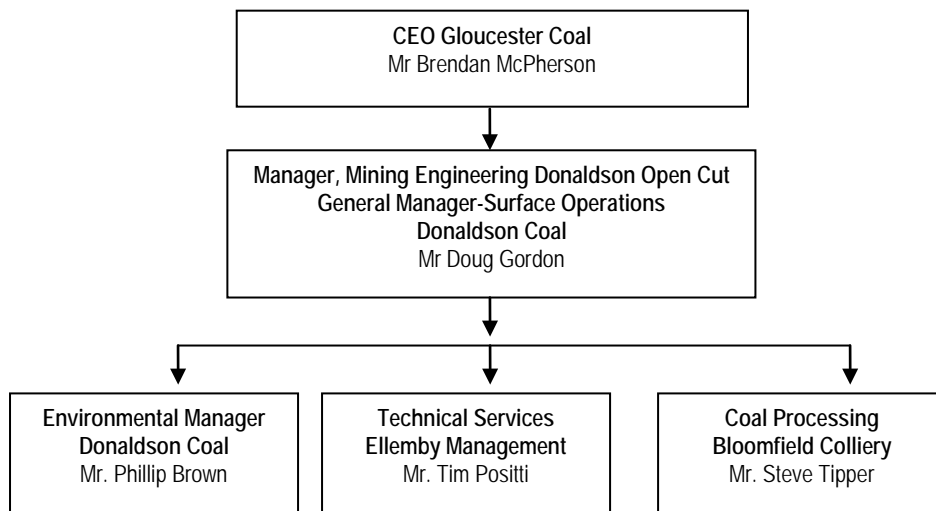
An amended MOP and associated plans were submitted to MR to cover the period January 2002 through to June 2006. A subsequent MOP was submitted to MR in June 2006 to cover the remaining life of the mine. This MOP also covers the relocation of the Hunter Water Board pipeline. This current MOP was issued 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.

The final MOP and Mine Closure plan was submitted to and approved by the Department during the 2010/11 AEMR reporting period.

1.3 MINE CONTACTS

Donaldson Coal Pty Ltd owns the mining operation and is the holder of the current mining lease. Donaldson is also the mining operator. Donaldson Coal is required to make appropriate appointments to fulfil the requirements of all statutory positions.

The following condensed 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
Fax: (02) 49342736
e-mail: donaldson@gcl.com.au
Internet: www.gloucestercoal.com.au

Community Hotline (24hrs): 1800 111 271

1.4 ACTIONS REQUIRED AT PREVIOUS AEMR REVIEW

An annual environmental inspection of Donaldson Coal Mine was not undertaken during the reporting period.

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 2010 – 31st October 2011.

2.1 EXPLORATION

There was no exploration undertaken during the 2010-2011 AEMR reporting period and there is no exploration proposed for 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 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

A dirt bridge was built over Four Mile Creek for access to the Square Pit 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	360,598	360,598
Topsoil used/spread	67,100	67,100	98,600
Waste Rock	31,914,839	35,104,740	37,850,452
Coal (ROM)	11,460,655	12,649,374	13,564,795
Processing Waste	3,560,413	4,009,880	3,917,427
Product Coal (tonnes)	8,224,643	8,612,431	8,783,049

The total amount of waste rock moved in the 2011 AEMR period was 2,211,852 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 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011
Plant Feed	0	0	0	0	1,048	8,515
Washed Coal	0	0	0	0	0	0
Sizing	0	0	0	0	0	0

(tonnes)	May 2011	June 2011	July 2011	Aug 2011	Sep 2011	Oct 2011
Plant Feed	4,659	2,810	60,179	91,446	137,300	111,293
Washed Coal	4,956	9,329	52,641	89,146	109,347	122,369
Sizing	0	0	0	0	0	0

Totals for the reporting period were:

(tonnes)	TOTAL
Plant Feed	417,250
Washed Coal	387,788
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

Bloomfield Colliery, as part of the contract discussed above, manages all process waste. Both tailings and coarse rejects are disposed of on site at Bloomfield 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:

- Open Cut administration and bathhouse
- Donaldson administration facility.

Individual Bio-cycle units service 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. Donaldson Coal 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, labeled 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 Maxxhire 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 Bloomfield's CHPP and as such are specifically managed by Bloomfield. Table 5 shows the washed and sizing stockpile capacities allocate to Donaldson Coal at Bloomfield.

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 ROM stockpiles are full. The first is located part the way along the coal haul road adjacent to the Maxxhire 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.

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.

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 site rainfall for the Donaldson Mine. All water for this monitoring period was obtained from site supplies.

FIGURE 1: SITE RAINFALL

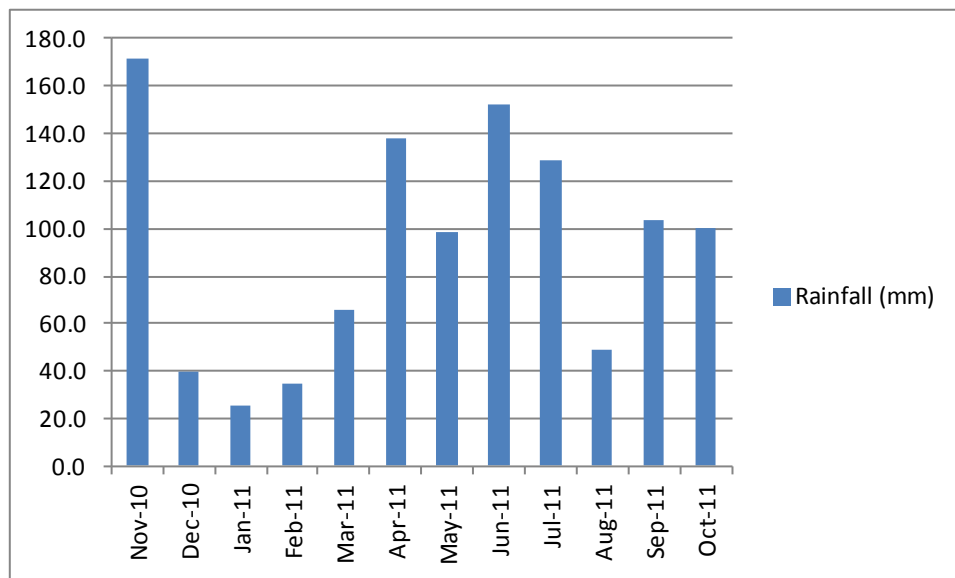


Table 6 shows the volume of water stored on site at the start and end of the reporting period. It also includes reference to the available storage capacity.

Note: Donaldson does not participate in the Hunter River Salinity Trading Scheme.

TABLE 6: STORED WATER

	Volumes held (cubic metres)		
	Start of Reporting Period	At end of Reporting Period	Storage Capacity
Dirty water	8	18	18
Contaminated water*	275	321	400+
Controlled discharge water** (salinity trading schemes)	N/A	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, Donaldson Coal 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 Donaldson Coal Site Safety Management System.

2.9.1 Explosives

Orica Blasting Services currently provide blasting services to the mine. Previously, blasting was conducted by UEE and Roche Sasol Blasting. Orica 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.

A diesel fuel farm facility capable of storing up to 100,000L of diesel fuel is located onsite. The fuel farm facility has been approved as a bulk storage facility for hazardous materials.

2.9.3 Chemicals

Donaldson Coal keeps 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 in 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)

The revised EMS has been developed in accordance with the ISO 14001 standard and the additional specific requirements of the Development Consent.

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 Bloomfield	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 meteorological station has been in operation at the site since 3rd December 1999. 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. The Meteorological station was upgraded with new monitoring equipment in the 2008/9 AEMR reporting period. The station is a Davis Vantage Pro 2 system with instrumentation installed to measure solar radiation (W/m^2), 2m and 10m temperature ($^{\circ}C$), wind speed (m/s), wind direction and rainfall (mm). Data from the station is recorded continuously and reported as ten-minute averages. **Figure 2** shows a typical screen that is displayed both in the Donaldson Coal Communication's office and the Shift Foreman office.

Rainfall

Table 8 details the rainfall for the 2011 AEMR reporting period. A total of 1106.3mm was recorded during the 2011 AEMR reporting period, more than the corresponding 2010 AEMR period (699.5 mm) and 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.

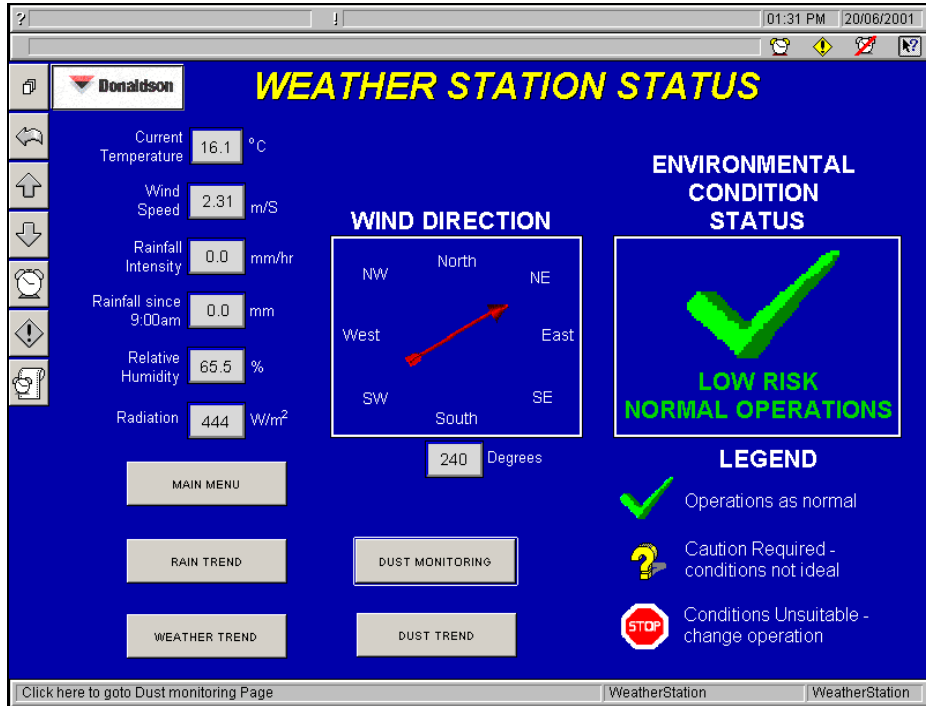


TABLE 8: COMPARISON BETWEEN MONTHLY RAINFALL DURING THE 2009/10 AEMR REPORTING PERIOD, PREVIOUS REPORTING PERIODS AND HISTORICAL AVERAGE.

Period	Average Monthly Rainfall (mm)												Total
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	
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	154.3	46	237.6	2.2	122.9	30	28.5	195.3	62.2	73.3	62.6	1168.3
2009	11.3	97.7	136.5	157.2	125.7	75.7	32.1	1.8	29.2	59.8	51.4	62	840.4
2010	0	52.1	83.9	37.1	89.4	112.8	65.3	38.5	26.4	80.6	171.1	39.9*	797.1
2011	26.0	34.5	65.6	137.9	98.8	152.0	129.0	49.0	103.0	100.0			

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 season within the 2011 AEMR reporting period are included in **Appendix 5**. A windrose chart for the entire 2011 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, PM₁₀ 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 PM₁₀;
- two continuous DustTrak monitors measuring PM₁₀;
- eleven Depositional Dust Gauges measuring insoluble solids; and
- one GRIMM monitor measuring PM₁₀ 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 neighboring 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 2011 AEMR reporting period.

A review of the dust monitoring data for the period suggests that there has been no significant 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 high

events are related to activities adjacent to the monitoring site or regional effects (other than mining) including, but not limited to, dirt roads, bushfires, regional dust storms and lawn mowing.

A summary of the air quality monitoring data for the reporting period is provided.

Depositional Dust Gauges

Results were recorded for 140 monthly samples at twelve (12) dust gauges out of a possible total of 144. 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/m².month. Results are displayed in **Table 9**. Results are generally similar or slightly lower to the previous year's results however; they indicate no major increase in dust emissions.

TABLE 9: 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)	Annual Average Insoluble Solids (g/m ² .month)
DG1	12	12	1.3	0.4	0.8
DG2	12	12	4.1	0.1	1.4
DG3	12	12	5.4	0.6	1.9
DG4	12	12	1.4	0.1	0.8
DG5A	12	12	1.7	0.4	0.7
DG6	11	11	0.9	0.3	0.6
DG7	12	12	1.0	0.3	0.7
DG8	12	12	2.4	0.9	1.6
DG9	9	9	1.2	0.4	0.8
DG10	12	12	2.3	0.4	1.0
DG11	12	12	1.5	0.3	0.9
DG12	12	12	0.9	0.3	0.5

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. PM₁₀ (particulate matter of diameter less than 10 µm) and TSP (total suspended particulate matter). A summary of these measurements is included below.

PM₁₀

The annual average PM₁₀ at both monitoring sites was below the annual average maximum criteria of 30µg/m³. The annual average PM₁₀ at the Beresfield Golf Course and at the "Bartter Enterprise" location were similar compared to the previous 2010 AEMR reporting period. Results are displayed in **Table 10**.

During this AEMR reporting period, all PM₁₀ measurements recorded at the Beresfield Golf Course and at the "Bartter Enterprise" location satisfied the 24-hour NEPM maximum criteria of 50 µg/m³.

TABLE 10: DETAILS OF CONCENTRATION MONITORING (PM₁₀ HIGH VOLUME AIR SAMPLERS).

Sample Site	No Samples Required	No samples collected and analysed	Maximum PM ₁₀ Value (µg/m ³)	Minimum PM ₁₀ Value (µg/m ³)	Mean PM ₁₀ Value (µg/m ³)
Beresfield Golf Course	61	61	33	4	13
"Bartter Enterprise"	61	61	31	2	11

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 11**.

The annual average TSP result at "Bartter Enterprise" (26 µg/m³) was well below the annual average criteria of 90 µg/m³. While there are no specified criteria for a 24-hr TSP maximum in the Donaldson consent or EPA license, all TSP results were well below the US EPA short term good air quality criteria of 260 µg/m³.

In general, the results recorded during this reporting period are slightly higher to the corresponding measurements of the 2010 AEMR reporting period and indicate a low dust impact from mining operations. The ratio of PM₁₀ to TSP over the reporting period was 42%, which is a slightly lower ratio than the last reporting period results (44%) indicating less finer particulates in the Total Suspended Particulates.

TABLE 11: 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	74	7	26

Table 12 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 12: 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 "Barter 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 13 summarises the DustTrak monitoring data and the data capture rate. The measurements of PM₁₀ 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 PM₁₀, annual average PM₁₀ and the lowest 24-hour average PM₁₀. Despite this, the valid data recovery rate, refer **Table 13**, upon which the PM₁₀ 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 PAEHolmes provide graphs of all the data collected, including valid and non-valid data. Charts of all DustTrak valid data in the AEMR monitoring period are provided in **Figures 3 and 4**.

TABLE 13: 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	33.3	84.0	43.1	15.4	2.5
"Barter Enterprise"	Continuous	32.8	73.9	117.2	44.2	2.6

Note: Data in this table is for the annual reporting period 1 November 2010 to 31 October 2011 as reported by PAEHolmes.

The results from DustTrak monitoring are higher than those obtained from the PM₁₀ High Volume Air Sampling at the Barter site. The annual averages were below the maximum NEPM annual average criteria at the Weakleys Drive site and above the maximum NEPM annual average criteria at the Barter site.

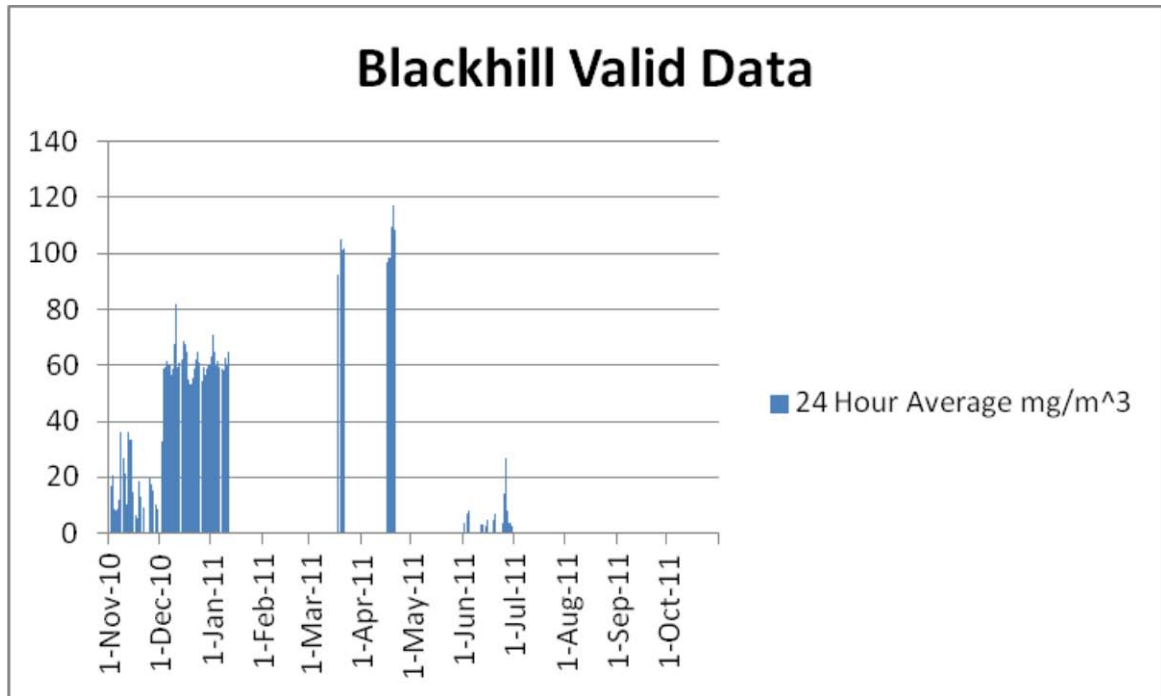


Figure 3: Dusttrak Monitoring 1 November 2010 to 31 October 2011 at the Blackhill Site

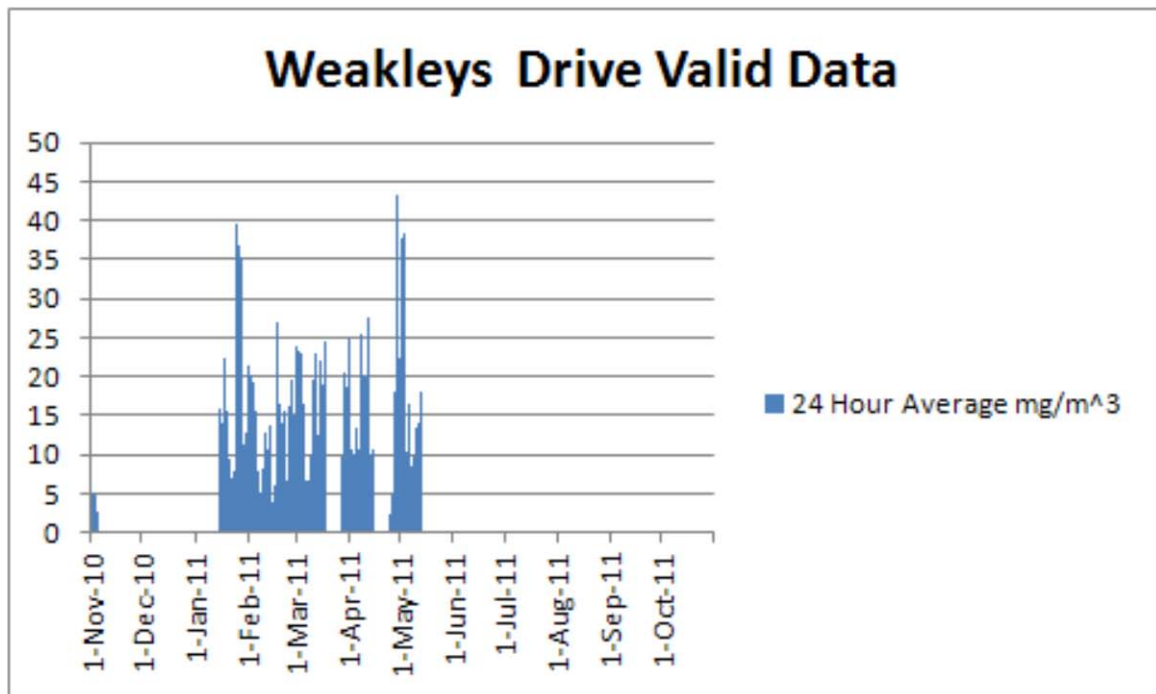


Figure 4: Dusttrak Monitoring 1 November 2010 to 31 October 2011 at the Weakleys Drive Site

PM_{2.5} Air Quality Monitoring

PM_{2.5} dust monitoring was undertaken by a dusttrak monitor for one campaign event during this reporting period at the Bartter (Blackhill) site. Monitoring was conducted continuously over the period 1 June to 1 July 2011. 10-minute and 24-hour averages were obtained and are provided in Figure 5.

This was the only campaign event for 2011 due to monitoring equipment malfunction resulting from water damage.

Data collected during the June 2011 sampling event showed that PM₁₀ measured at the site consisted of an average of approximately 15% to 20% PM_{2.5} particles respectively. This is slightly lower than 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.

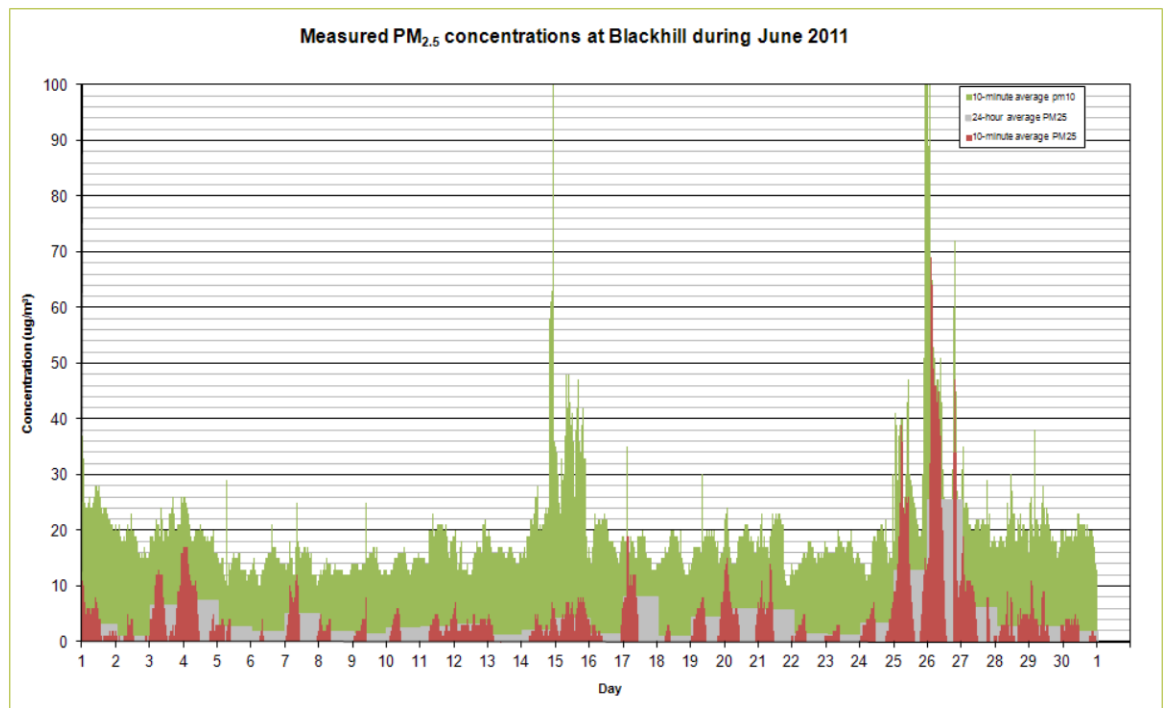


Figure 5: PM₁₀ and PM_{2.5} chart for the period 1 June 2011 to 1 July 2011

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 undertaken 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 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) is reported as an indicative measure of the effectiveness of sediment control. **Table 14** includes TSS data collected during the 2011 AEMR reporting period. Where necessary flocculants 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**. Carbon Based Environmental 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 (SO₄), on a monthly basis. A full suite analysis is also carried out on a quarterly basis and includes analysis for EC, pH, TDS, TSS, SO₄, Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Chloride (Cl), Fluoride (F), 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 CaCO₃, 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.

The out of pit sediment dam is sampled on a monthly basis to monitor any possible Acid Mine Drainage from the Out of Pit Dump. In this monitoring period it was sampled on 12 occasions.

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.

Three monitoring surveys were completed during the 2011 AEMR reporting period, on the 14th December 2010, the 1st April 2011 and the 18th October 2011.

Control Strategy:

The following control measures are employed at 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 2011 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 14** 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, apart from Scotch Dairy Creek Downstream which is slightly below the lower guideline. 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 mean EC values in **Table 14** were generally higher than pre-mining results but were higher at the upstream water 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 values at Weakleys Flat Creek Downstream and lower values at Scotch Dairy Creek Downstream. TSS levels were impacted by very high rainfall during the year and were not directly attributable to impacts from Donaldson Coal.

TABLE 14: 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	10	7.1	639	20	6.5	278	7	6.8	476	13
<i>Pre-mining</i>	---	---	<i>7.44</i>	<i>522</i>	<i>90</i>	<i>6.70</i>	<i>265</i>	<i>180</i>	<i>7.06</i>	<i>276</i>	<i>32</i>
Four Mile Ck Downstream	12	12	7.5	1580	23	6.7	120	5	7.0	281	10
<i>Pre-mining</i>	---	---	<i>7.73</i>	<i>265</i>	<i>32</i>	<i>6.40</i>	<i>120</i>	<i>2</i>	<i>7.15</i>	<i>175</i>	<i>8</i>
Scotch Dairy Creek Upstream	12	12	7.5	674	67	5.6	260	8	6.3	377	30
<i>Pre-mining</i>	---	---	<i>6.81</i>	<i>200</i>	<i>47</i>	<i>5.90</i>	<i>71</i>	<i>9</i>	<i>6.33</i>	<i>210</i>	<i>22</i>
Scotch Dairy Creek Downstream	12	9	6.5	262	198	5.1	152	6	5.6	220	46
<i>Pre-mining</i>	---	---	<i>6.80</i>	<i>270</i>	<i>1283</i>	<i>5.80</i>	<i>145</i>	<i>12</i>	<i>6.43</i>	<i>180</i>	<i>271</i>
Weakleys Flat Ck Upstream	12	11	7.6	2040	55	6.7	251	8	7.1	601	17
<i>Pre-mining</i>	---	---	<i>7.49</i>	<i>310</i>	<i>3</i>	<i>6.60</i>	<i>200</i>	<i>1</i>	<i>7.15</i>	<i>249</i>	<i>2</i>
Weakleys Flat Ck Downstream	12	7	6.9	708	168	6.3	226	32	6.6	379	94
<i>Pre-mining</i>	---	---	<i>7.28</i>	<i>546</i>	<i>17</i>	<i>6.40</i>	<i>230</i>	<i>3</i>	<i>7.01</i>	<i>419</i>	<i>8</i>

* Some sites were dry at the time of sampling, with no sample available which accounts for the reduced number of samples collected.

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 14th December 2010 and the 18th October 2011. Six sites are targeted on the three major tributaries traversing the mine site. **Table 15** includes the results for the last 21 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. However none of the invertebrates observed in the autumn survey were present in the spring survey indicating a substantial decrease in the numbers of Gambusia (mosquito fish). Stream levels and flows were higher in spring. The majority of AUSRIVAS scores for the sites included in this report are reasonable, refer to **Table 15**.

All systems performed relatively favourably with downstream comparison (Tuft and Associates, 2011). Individual site conclusions are provided by Tuft and Associates and these reports may be supplied upon request.

Table 15: MACROINVERTEBRATE MONITORING (SPRING/AUTUMN 2001-2011) RESULTS COMPARED WITH BASELINE.

	Four Mile Upstream	Four Mile Downstream	Scotch Dairy Upstream	Scotch Dairy Downstream	Weakleys Flat Upstream	Weakleys Flat Downstream
<u>DIVERSITY</u>						
Spring 2011	8	9	13	16	15	15
Autumn 2011	15	13	-	-	19	-
Spring 2010	21	22	13	22	30	17
Autumn 2010	20	27	15	11	30	6
Spring 2009	28	26	21	18	30	19
Autumn 2009	17	7	17	9	20	19
Spring 2008	32	24	23	25	25	28
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
<u>SIGNAL INDEX</u>						
Spring 2011	6.3	5.3	6.1	6.0	4.8	6.0
Autumn 2011	5.9	5.4	-	-	4.8	-
Spring 2010	5.3	5.3	5.8	5.2	5.0	5.3
Autumn 2010	5.1	4.9	4.4	4.2	4.5	5.8
Spring 2009	5.3	5.7	5.8	5.8	5.4	5.4
Autumn 2009	5.9	7.1?	5.5	6.0	4.9	5.4
Spring 2008	5.3	5.9	5.4	6.2	5.6	5.4
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

Table 15 (continued): MACROINVERTEBRATE MONITORING (SPRING/AUTUMN 2001-2011) RESULTS COMPARED WITH BASELINE.

	Four Mile Upstream	Four Mile Downstream	Scotch Dairy Upstream	Scotch Dairy Downstream	Weakleys Flat Upstream	Weakleys Flat Downstream
<u>AUSRIVAS</u>						
Spring 2011	0.51 (Band C)	0.39 (Band C)	0.7 (Band B)	0.88 (Band A)	0.48 (band C)	0.86 (Band A)
Autumn 2011	0.45 (Band C)	0.39 (Band C)	-	-	0.59 (Band B)	-
Autumn 2010	0.68 (Band B)	0.67 (Band B)	0.7 (Band B)	0.77 (Band B)	0.8 (Band B)	0.92 (Band A)
Spring 2009	0.68 (Band B)	0.68 (Band B)	0.8 (Band B)	0.96 (Band A)	1.02 (Band A)	1.1 (Band A)
Autumn 2009	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 2008	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 2008	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 2007	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 2007	0.54 (Band B)	0.49 (Band B)	0.48 (Band B)	0.69 (Band B)	0.68 (Band B)	out of range
Spring 2006	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 2006	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 2005	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 2005	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 2004	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 2004	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 2003	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 2003	0.87 - Band A	0.93 - Band A	1.03 - Band A	1.09 - Band A	0.78 - Band B	103 - Band A
Spring 2002	1.08 - Band A	0.58 - Band B	NR	0.9 - Band A	0.96 - Band A	0.69 - Band B
Autumn 2002	0.68 - Band B	0.61 - Band B	0.83 - Band A	0.95 - Band A	0.87 - Band A	0.87 - Band A
Spring 2001	0.93 - Band A	1.04 - Band A	1.08 - Band A	0.82 - Band A	0.86 - Band A	0.82 - Band A
Autumn 2001						
BASELINE						

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 16 provides a summary of the RCE ranking results for the last twenty one (21) surveys as well as the baseline survey.

TABLE 16: RCE RANKING FOR ALL MONITORING SITES (2000-2011).

Site	Date of Collection	Bank Condition Scores	Bank Condition Rating	Bed Condition Score	Bed Condition Rating	Stream Condition (RCE)	RCE Rating
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
	21/11/08	17	Good	8	Fair	41	Good
	20/5/09	16	Good	10	Good	38	Good
	16/11/09	15	Good	5	Poor	33	Fair
	27/4/10	16	Good	9	Good	40	Good
14/12/10	17	Excellent	9	Good	41	Good	
1/4/11	15	Good	6	Poor	36	Fair	
18/10/11	17	Excellent	8	Fair	41	Good	
Four Mile Ck D/S	26/09/00	21	Excellent	6	Poor	39	Good
	19/03/01	15	Good	7	Fair	39	Good
	11/10/01	16	Good	7	Fair	37	Good
	15/04/02	16	Good	6	Poor	36	Fair
	9/10/02	20	Excellent	9	Good	45	Good
	17/04/03	19	Excellent	10	Good	45	Good
	10/10/03	16	Good	11	Excellent	43	Good
	1/4/04	17	Good	10	Good	44	Good
	6/10/04	14	Good	10	Good	41	Good
	15/4/05	14	Good	10	Good	39	Good
	27/9/05	15	Good	10	Good	40	Good
	11/4/06	15	Good	8	Fair	38	Good
	17/11/06	16	Good	10	Good	43	Good
	20/4/07	16	Good	8	Fair	40	Good
	5/10/07	15	Good	10	Good	40	Good
	8/4/08	13	Good	10	Good	40	Good
	21/11/08	12	Fair	9	Good	35	Fair
	20/5/09	13	Good	5	Poor	30	Fair
	16/11/09	14	Good	10	Good	39	Good
	27/4/10	13	Good	11	Good	38	Good
14/12/10	14	Good	11	Good	40	Good	
1/4/11	16	Good	5	Poor	35	Fair	
18/10/11	13	Good	7	Fair	36	Fair	

TABLE 16 (continued): RCE RANKING FOR ALL MONITORING SITES (2000-2011).

Site	Date of Collection	Bank Condition Scores	Bank Condition Rating	Bed Condition Score	Bed Condition Rating	Stream Condition (RCE)	RCE Rating
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
	10/10/03	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
	27/9/05	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
	21/11/08	17	Excellent	4	Very Poor	41	Good
	20/5/09	15	Good	5	Poor	33	Fair
	16/11/09	15	Good	4	Very Poor	35	Fair
	27/4/10	15	Good	5	Very Poor	35	Fair
14/12/10	18	Excellent	4	Very Poor	38	Good	
18/10/11	17	Excellent	4	Very Poor	38	Good	
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
	10/10/03	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
	21/11/08	16	Good	8	Fair	39	Good
	20/5/09	14	Good	6	Poor	34	Fair
	16/11/09	14	Good	5	Poor	34	Fair
	27/4/10	13	Good	10	Fair	37	Good
14/12/10	15	Good	7	Fair	37	Fair	
18/10/11	17	Excellent	6	Poor	39	Good	
Weakleys Flat Ck U/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
	21/11/08	15	Good	8	Fair	39	Good
	20/5/09	15	Good	7	Fair	37	Good
	16/11/09	15	Good	7	Fair	37	Fair
	27/4/10	16	Good	6	Poor	34	Fair
14/12/10	15	Good	6	Poor	34	Fair	
1/4/11	14	Good	6	Poor	34	Fair	
18/10/11	14	Good	7	Fair	34	Fair	

TABLE 16 (continued): RCE RANKING FOR ALL MONITORING SITES (2000-2011).

Site	Date of Collection	Bank Condition Scores	Bank Condition Rating	Bed Condition Score	Bed Condition Rating	Stream Condition (RCE)	RCE Rating
Site 6 Weakleys Flat Ck D/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
	21/11/08	15	Good	6	Poor	34	Fair
	20/5/09	13	Good	4	Very Poor	23	Very Poor
	16/11/09	14	Good	5	Poor	34	Fair
	27/4/10	15	Good	8	Fair	34	Fair
14/12/10	15	Good	6	Poor	36	Fair	
18/10/11	15	Good	7	Fair	39	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 license 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. Carbon Based 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 SO₄ 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, SO₄, Ca, Mg, Na, K, Cl, F, As, Al, Ba, Cd, Co, Cu, Cr, Fe, Mn, Pb, Zn and Total Alkalinity as CaCO₃.

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 during the 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.

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 17**.

Generally the average Standing Water Levels (SWL) were higher than the baseline period (water moving away from the surface), however the variation in water level could be attributed to seasonal variations as there are similar trends across most sites. Additionally, the SWL show similar groundwater levels compared to the corresponding values in the 2010 AEMR reporting period.

Average pH values are generally similar to background levels at all sites, refer to **Table 17**. The EC values are generally similar to pre-mining values apart from DPZ3 and DPZ5 which have shown significant decreases in EC. **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 2011 AEMR reporting period.

TABLE 17: 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	-	-	-	-	-	-	-	-	-	-	-
<i>Pre-mining</i>	---	---	<i>No pre-mining samples available</i>								
DPZ3	12	12	7.4	14100	18.7	5.1	220	9.2	6.0	1825	10.4
<i>Pre-mining</i>	---	---	6.96	11350	11.51	5.99	10200	12.05	6.59	10860	11.76
DPZ5	10	10	6.0	963	10.0	5.4	88	6.5	5.6	276	7.3
<i>Pre-mining</i>	---	---	7.21	8520	5.90	6.72	4280	5.73	7.37	6986	5.81
DPZ6	12	12	7.4	4140	36.0	6.5	1090	20.8	6.8	3082	32.7
<i>Pre-mining</i>	---	---	<i>No pre-mining samples available</i>								
DPZ7@50m	12	12	7.7	2870	25.7	6.3	1540	18.7	6.9	2524	24.4
<i>Pre-mining</i>	---	---	6.14	2390	21.47	5.36	2180	22.00	5.76	2270	21.78
DPZ8	12	12	5.6	3420	30.7	2.9	2640	21.0	3.6	3023	29.6
<i>Pre-mining</i>	---	---	5.66	1820	24.35	5.46	1690	24.35	5.56	1755	24.35
DPZ9	-	-	-	-	-	-	-	-	-	-	-
<i>Pre-mining</i>	---	---	6.32	2940	17.65	5.47	2221	17375	6.02	2563	17.49
DPZ10	12	12	7.3	3810	19.3	6.4	3020	13.3	6.7	3542	14.0
<i>Pre-mining</i>	---	---	6.97	3760	12.40	6.48	3670	12.40	6.71	3611	12.40
DPZ12	12	12	7.5	14200	20.2	6.0	1080	16.1	6.6	6147	17.5
<i>Pre-mining</i>	---	---	<i>No pre-mining samples taken due to restricted access to private property</i>								
DPZ13	12	12	7.5	14300	18.6	6.6	3770	7.0	7.0	11078	8.3
<i>Pre-mining</i>	---	---	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 which accounts for the reduced number of samples collected.

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 works 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 2010 (Ecobiological, 2011) was prepared during the 2011 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 to 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 2010 (Ecobiological, 2011):

Reasons for the decline in pollinator activity can only be speculated upon however most of the known *Tetralochea juncea* pollinators make nests in small tunnels in the ground and so the availability of suitable ground would be a pre-requisite. It has been over 10 years since a fire in the TjCA and it is possible that suitable nesting areas have either been overgrown or covered in leaf litter.

There has been one published study (Norton 1994) and one unpublished study (Driscoll unpub) looking at the response of *Tetralochea 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.

Bartier et al (2001) studied the germination of *Tetralochea juncea* seed and found that the application of smoke water resulted in a significant increase in germination rate. They also studied the viability of the soil seedbank and found it to be only a few months.

Overall, indications are that the population in the TjCA would benefit from a fire through the area. As has been recommended since the 2007 annual report it is again recommended that the TjCA be burned at an appropriate time. An appropriate time would be no later than April in order to take advantage of viable seed and to allow for re-sprouting during warm weather. Figure 9 shows a recommended area to be burnt.

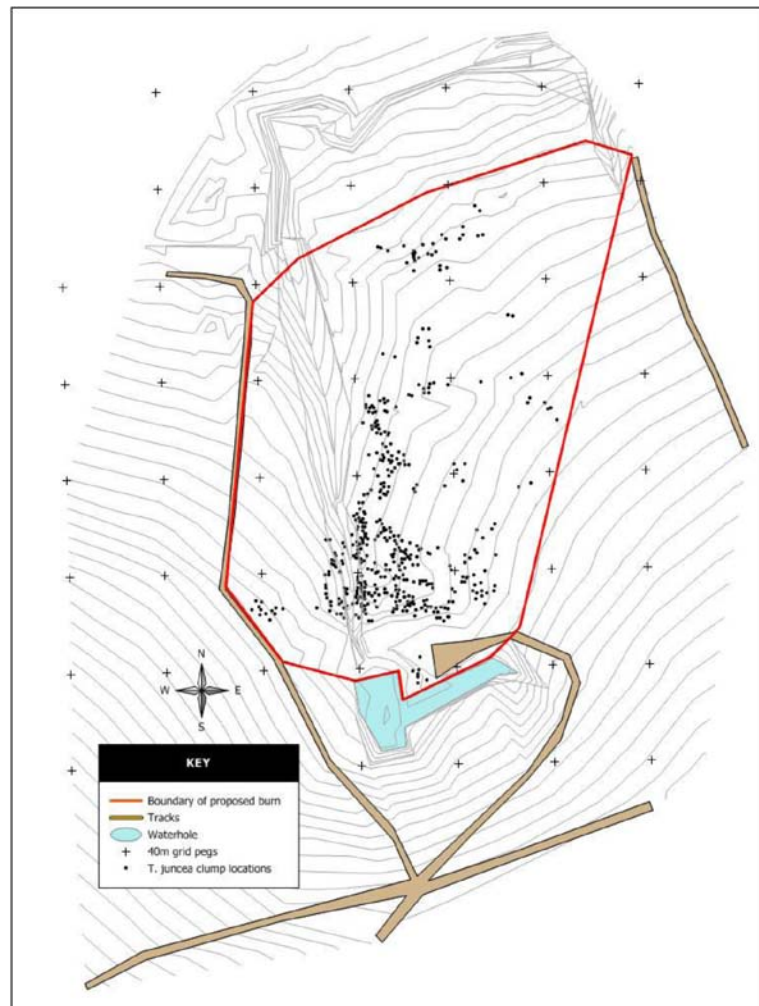


Figure 6: Recommended burn area for 2011

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. A summary of the annual surveys follows.

In August 2008, 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.

From the time of translocation, where 100% of plants were living, to September 2005 (where plants 36 and 37 were translocated), 79% of the total translocated plants had survived and all living plants were flowering. Between September 2005 and June 2006, more plants had succumbed to environmental pressures. Only 14 of the total 37 plants translocated (36%) had survived.

In May 2007, just 10 of the 37 translocated plants (27%) were alive, with some observed to be flowering. No seed pods were identified. This survival rate remained the same over the next 15 months to August 2008. The June 2009 monitoring survey indicated that one plant on Group 3 has perished since the last monitoring survey back in August 2008, and one plant on Group 4 has 2 new shoots, which have not been identified from this plant since June 2006 (12 months since planting). The total survival rate for the initial translocation program is currently 27% after 4 years. From the ten surviving plants in the June 2009 monitoring survey, seven were showing flower buds and flowers, and all had significant additional growth.

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 Fauna

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;
- Yellow-bellied Sheath-tail Bat
- Eastern Bent-wing Bat
- Eastern Freetail Bat

- Greater Broad-nose Bat
- Little Bent-winged Bat.

Since the initial development of the Flora & Fauna Management Plan the Sooty Owl, The large footed Myotis I 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 completed a recent experiment that tested the utilisation of artificial nest boxes placed in trees in 2005. This study continued through summer and winter from 2005 to 2010. There was a significant increase in proportion of nest boxes occupied over time from 2005 to 2010. Nest box utilization was significantly higher in summer than in winter across the years. Five species of fauna (Sugar Glider, Brown Antechinus, Feathertail Glider, Gould's Wattleed Bat and Common Bushtail Possum) were visually confirmed to be active in and around the nest boxes on the site. In June 2008, 51.1% of nest boxes showed evidence of use, while in December 2008, this figure increased considerably to 64.4%. In July 2009 evidence of use reduced slightly to 60% followed by a slight increase in December 2009 to 62.2%. In May 2010 the nest box usage has risen considerably to 73.3% while in January 2011 this figure decreased to 66.6%. Several nest boxes

were replaced in 2010 due to deterioration which may explain why occupancy was low. In July 2011, results have shown a considerable increase with 78.6% of nest boxes being used/occupied which is consistent with previous trends comparing winter periods. The individuals at Donaldson Coal are an important population considered in this research project. Donaldson Coal proposes to utilize nest box installation and monitoring within current future rehabilitation areas.

Targeted bi-annual bird surveys began in 2003 with a winter and summer survey of each quadrant conducted. A 2-ha area centered on each quadrant was surveyed for 30minutes in the morning between May and June 2010 and the birds were identified either visually, with the aid of binoculars, or by call interpretations.

Results for the annual flora and fauna monitoring survey conducted in late 2009 indicate 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.
- This 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 2009 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 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 other 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.

In addition to routine flora and fauna monitoring surveys, monitoring of fauna recolonisation success of the mines rehabilitation works has also been undertaken (Ecobiological, 2010). Four monitoring events have been undertaken to date. Stage 1 of the study, involving fieldwork and the preparation of an initial report, was undertaken in March 2008. Fieldwork and preparation of the second monitoring report were completed in December 2008. The third monitoring event and report preparation was undertaken in December 2009. The fourth monitoring event and report preparation was undertaken in December 2010.

Monitoring results indicate that all rehabilitation areas studied are showing positive signs of recolonisation by a variety of fauna species. Nine new species (two mammal and seven bird) were recorded during the December 2009 survey period. Overall, the total numbers of individuals captured increased in the current trapping period, compared with captures in December 2008. However, there was a decrease from 39 species recorded in both previous surveys to 33 species recorded overall in 2009 and 30 species in 2010.

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.

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 program, targeting *Pampas Grass*, in 2011. The plants, located on disturbed areas of the mine, were treated with herbicide application and flowering head removal. The treatment was carried out by suitably qualified personnel utilising manual shears and application of a Glyphosate herbicide product. 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, a control strategy will be employed.

3.2.10 Blasting

Blasting activities commenced at Donaldson Coal mine on the 15th November 2001. A total of 38 blasts were undertaken at the mine during the 2011 AEMR reporting period compared to 36 blasts in the 2010 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.

On the 5th November, 2010 the blast monitors were relocated as the mine operations had moved further west along John Renshaw Drive.

Blast monitors are now located at:

1. Fairfax Regional Printing Facility
2. Jennings, 118 Blackhill Road, Blackhill
3. ABAKK property, Cnr Blackhill Road and John Renshaw Drive, Blackhill
4. 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 (the pipeline unit) is used 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 previously 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.

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 DCCC (EPA) License 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 18**. All blast results are included in **Appendix 9**. The maximum vibration (peak particle velocity) recorded at the sites during the reporting period was 3.849 mm/s, which was below the applicable criteria (5 mm/s).

TABLE 18: 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
Jennings	38	38	2.812	0.169	0.66
Fairfax Printing	38	38	0.105	0.026	0.06
HWC Pipeline	38	37	3.849	0.497	1.84
Abakk	7	7	1.58	0.411	0.91

A summary of the overpressure monitoring results for blasts undertaken during the period is presented in **Table 19** below. DCCC (EPA) License criteria are applicable at the Jennings monitor. All blasts at this site recorded blast overpressure below 115dB(L), well within the Licence conditions. Overpressure monitoring is not required at the HWC pipeline site.

TABLE 19: 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
Jennings	38	38	112.3	91.4	103.25
Fairfax Printing	38	38	109.1	87.9	96.79
Abakk	7	7	111.5	97.8	105.67

Overall the data capture rate during the reporting period has been very good. **Table 20** 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. Only one blast at the Pipeline Monitor was not monitored due to a low external battery voltage and as such did not receive SMS trigger.

TABLE 20: SUMMARY OF DATA CAPTURE RATES – BLAST MONITORING UNITS

Monitoring Location	% Data Capture
Jennings	100
Fairfax Regional Printing Press	100
Abakk	100
Hunter Water Pipeline	97.4
OVERALL:	99.35

The rate of data capture was similar from that recorded in the previous 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

Heggies Pty Ltd² have completed four routine quarterly unattended continuous noise surveys for Donaldson during the 2011 AEMR reporting period. The dates for the surveys are as follows:

- Tuesday 7th December - Thursday 16th December 2010;
- Tuesday 1st March- Wednesday 23rd March 2011
- Friday 17th June – Thursday 7th July 2011; and
- Tuesday 20th September – Tuesday 4th October 2011

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:

- Tuesday 7th/Friday 10th December 2010 (daytime), Tuesday 7th December (evening) and Tuesday 7th/Wednesday 8th December 2010 (night-time);
- Tuesday 1st/Wednesday 9th/Wednesday 16th March (daytime), Wednesday 23rd March (evening) and Tuesday 15th/Wednesday 16th March 2011 (night-time);
- Friday 17th/Friday 24th June (daytime), Wednesday 29th June (evening) and Wednesday 29th June 2011 (night-time); and
- Thursday 22nd September (daytime), Wednesday 21st September (evening) and Wednesday 21st September 2011 (night-time)

Heggies Pty Ltd² have performed baseline and preceding quarterly surveys at 5 locations around the Donaldson mine site. Heggies Pty Ltd, (2011a-d). Based on these surveys, the noise monitoring is now concentrated at the four potentially most affected areas at the time of survey. These locations are provided in **Table 21**.

TABLE 21: LIST OF PRESENT NOISE MONITORING SITES

Location	Donaldson Monitoring location
98 Weakleys Dr., Beresfield	Location A
684 Black Hill Road , Black Hill	Location F
156 Buchannan Road, Buchannan	Location G
17 Kilshanny Ave, Ashtonfield	Location L
Catholic Diocese of Maitland (formerly Bartter Enterprises)	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.

² Heggies Pty Ltd (Newcastle Office), Newcastle, NSW. Ph:02 4908 4500

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;
- 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

Tuesday 7th December – Thursday 16th December 2010 (December Quarter)

Table 22 presents a comparison between the noise statistics collected during the December quarter 2010 unattended continuous survey and the pre-mining baseline statistics.

TABLE 22: Unattended Continuous Monitoring Ambient Noise Levels, DECEMBER 2010 MONITORING PERIOD.

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive Beresfield	Daytime	63	61	52	60
	Evening	60	56	48	56
	ENCM Daytime	62	60	49	58
	Night	58	54	44	53
F Lot 684 Black Hill Road, Black Hill	Daytime	70	58	45	58
	Evening	66	55	40	60
	ENCM Daytime	69	58	42	58
	Night	58	52	40	54
G 156 Buchannan Road, Buchannan	Daytime	-	-	-	-
	Evening	-	-	-	-
	ENCM Daytime	-	-	-	-
	Night	-	-	-	-
I 17 Kilshanny Ave, Ashtonfield	Daytime	72	57	40	65
	Evening	55	44	36	53
	ENCM Daytime	45	53	37	63
	Night	42	38	33	44
K Catholic Diocese of Maitland	Daytime	57	54	47	52
	Evening	55	52	44	50
	ENCM Daytime	56	53	45	51
	Night	54	49	39	48

*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 - 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 LA₉₀ Noise Levels

A summary of ambient LA10 noise levels can be found within **Table 22**.

The summary of results in **Table 22** show that ambient LA90 noise levels recorded for the quarter ending December 2010 were higher than levels recorded during the baseline monitoring process at Location A by 7 dBA during the daytime and 5 dBA during the night-time. Increases of 6 dBA, 5 dBA and 9 dBA were recorded respectively in the daytime, evening and night-time at Location F. Noise levels at Location K showed an increase from baseline of 6 dBA in the daytime, 4 dBA during the evening and 3 dBA during the night-time.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

A comparison of the current monitoring period with the previous monitoring period shows that LA90 noise levels were higher than those recorded during the September 2010 by up to 6 dBA in the daytime, evening and night-time periods at Locations A, L and K. Decreases of 5 dBA and 2 dBA were recorded respectively in the evening and night-time periods at Location F whilst an increase of 3 dBA was recorded at Location F during the daytime.

No noise levels were recorded at Location G due to a logger failure therefore no comparisons can be made.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA90 noise levels were generally higher than those recorded in 2009 at all locations.

No noise levels were recorded at Location G due to a logger failure therefore no comparisons can be made.

Ambient LA₁₀ Noise Levels

The summary of results in **Table 22** show that ambient LA10 noise levels recorded for the quarter ending September 2010 were significantly greater than levels recorded during the baseline monitoring process at Location F by 5 dBA to 7 dBA. At Location A LA10 noise levels were 5 dBA higher during the daytime and the same or slightly lower during the evening and night-time than those recorded during the baseline monitoring period. At Location K, noise levels were similar (within 2 dBA) during all periods.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

A comparison of the current monitoring period with the previous monitoring period shows that recorded LA10 noise levels at Locations A, F and L were higher than levels recorded during the September 2010 quarterly monitoring during the daytime, evening and night-time periods. Noise levels at Location K were the same as or lower than levels recorded during the September 2010 quarterly monitoring.

No noise levels were recorded at Location G due to a logger failure therefore no comparisons can be made.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA10 noise levels recorded at Locations F and K were similar (within 2 dBA) to those recorded last year. Noise levels at Location A were up to 5 dBA higher than those recorded last year.

Noise levels at Location L were significantly higher (13 dBA) than those recorded last year during the daytime last year. This was due to construction activities at a nearby residential property.

Noise levels were similar to those recorded last year at Locations F and K.

No noise levels were recorded at Location G due to a logger failure therefore no comparisons can be made.

Tuesday 1st March – Wednesday 23rd March 2011 (April Quarter)

Table 23 presents a comparison between the noise statistics collected during the March 2011 quarter unattended continuous survey and the pre-mining baseline statistics.

TABLE 23: Unattended Continuous Monitoring Ambient Noise Levels, MARCH 2011 MONITORING PERIOD.

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	59	55	48	54
	Evening	59	56	47	55
	ENCM Daytime	59	55	48	55
	Night	59	57	44	54
F Lot 684 Black Hill Road, Black Hill	Daytime	71	58	41	59
	Evening	64	50	38	54
	ENCM Daytime	70	57	39	58
	Night	56	47	33	51
G 156 Buchanan Road, Buchanan	Daytime	57	46	31	49
	Evening	52	51	39	52
	ENCM Daytime	56	58	32	50
	Night	56	53	37	56
L 17 Kilshanny Ave, Ashtonfield	Daytime	57	47	35	61
	Evening	52	41	34	52
	ENCM Daytime	56	45	34	55
	Night	44	41	35	53
K Catholic Diocese of Maitland	Daytime	57	53	43	52
	Evening	60	59	50	62
	ENCM Daytime	58	54	44	58
	Night	59	57	48	57

*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 - 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 LA₉₀ Noise Levels

The summary of results in Table 23 show that ambient LA₉₀ noise levels recorded for the quarter ending March 2011 were higher than levels recorded during the baseline monitoring process at Location A by 3 dBA during the daytime and 5 dBA during the night-time. Increases of 2 dBA, 3 dBA and 2 dBA were recorded respectively in the daytime, evening and night-time at Location F. Noise levels at Location K showed an increase from baseline of 2 dBA in the daytime, 10 dBA during the evening and 10 dBA during the night-time.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

A comparison of the current monitoring period with the previous monitoring period shows that LA90 noise levels were generally lower than those recorded during the December 2010 by up to 7 dBA at Locations A, F, and L. Increases of 6 dBA and 10 dBA were recorded respectively in the evening and night-time periods at Location K.

No noise levels were recorded at Location G during December 2010 due to a logger failure therefore no comparisons can be made.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA90 noise levels were generally similar (within 1 dBA) or lower than those recorded in 2010 at all locations with the exception of Location K during the evening and night-time where increases of 6 dBA and 7 dBA were recorded respectively.

No noise levels were recorded at Location G during December 2010 due to a logger failure therefore no comparisons can be made.

Ambient LA₁₀ Noise Levels

The summary of results in **Table 23** show that ambient LA10 noise levels recorded for the quarter ending March 2011 were 7 dBA greater than levels recorded during the baseline monitoring process at Location F during the daytime. At Location A LA10 noise levels were 3 dBA higher during the night-time slightly lower during the daytime and evening than those recorded during the baseline monitoring period. At Location K, noise levels were significantly higher by 8 to 9 dBA during the evening and night-time.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

A comparison of the current monitoring period with the previous monitoring period shows that recorded LA10 noise levels at Locations A were 3 dBA higher than levels recorded during the December 2010 quarterly monitoring during the night-time and the same or lower during the daytime and evening periods. Noise levels at Location F were the same as or lower than those recorded in the previous monitoring period. Noise levels at Location L were lower during the daytime and evening and 3 dBA higher during the night-time. At Location K, noise levels were significantly higher by 7 dBA to 8 dBA during the evening and night-time.

No noise levels were recorded at Location G during December 2010 due to a logger failure therefore no comparisons can be made.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA10 noise levels recorded at Locations A, F and L were similar (within 2 dBA) or lower than those recorded last year. Noise levels at Location G were up to 9 dBA higher than those recorded last year. Noise levels at Location K were up to 4 dBA higher than those recorded last year.

Friday 17th June – Thursday 7th July 2011 (June Quarter)

Table 24 presents a comparison between the noise statistics collected during the June 2011 quarter unattended continuous survey and the pre-mining baseline statistics.

TABLE 24: Unattended Continuous Monitoring Ambient Noise Levels, JUNE 2011 MONITORING PERIOD.

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	56	51	42	52
	Evening	54	49	40	48
	ENCM Daytime	55	50	40	49
	Night	53	47	32	46
F Lot 684 Black Hill Road, Black Hill	Daytime	68	58	46	58
	Evening	53	53	45	53
	ENCM Daytime	68	57	45	56
	Night	57	50	43	52
G 156 Buchanan Road, Buchanan	Daytime	50	43	32	45
	Evening	47	42	36	41
	ENCM Daytime	49	42	32	45
	Night	43	40	32	40
L 17 Kilshanny Ave, Ashtonfield	Daytime	56	47	35	51
	Evening	51	41	35	43
	ENCM Daytime	55	46	33	48
	Night	43	38	31	40
K Catholic Diocese of Maitland	Daytime	57	53	45	54
	Evening	55	51	40	49
	ENCM Daytime	56	52	43	52
	Night	54	49	36	49

*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 - 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 LA₉₀ Noise Levels

The summary of results in Table 24 show that ambient LA₉₀ noise levels recorded for the quarter ending June 2011 were lower than levels recorded during the baseline monitoring process at Location A by 4 dBA during the daytime, 9 dBA during the evening and 8 dBA during the night-time. Increases of 7 dBA, 9 dBA and 11 dBA were recorded respectively in the daytime, evening and night-time at Location F. Noise levels at Location K showed an increase from baseline of 4 dBA in the daytime 1 dBA during the night-time.

Given that no data was available at Locations G and L during baseline measurements no comparisons can be made.

A comparison of the current monitoring period with the previous monitoring period shows that LA₉₀ noise levels were generally similar (within 2 dBA) or lower than those recorded during the March 2011 by up to 13 dBA at Locations A, G, L and K. Increases of 5 dBA, 6 dBA and 10 dBA were recorded respectively in the daytime, evening and night-time periods at Location F.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA90 noise levels were generally similar (within 1 dBA) or lower than those recorded in 2010 at Locations A, G, K and L.

At Location F LA90 noise levels were higher than those recorded in 2010 by 3 dBA, 2 dBA and 5 dBA during the daytime, evening and night-time respectively.

Ambient L10₁₀ Noise Levels

The summary of results in **Table 24** show that ambient LA10 noise levels recorded for the quarter ending June 2011 were 7 dBA greater than levels recorded during the baseline monitoring process at Location F during the daytime, 4 dBA higher during the evening and 3 dBA higher during the night-time. At Location A LA10 noise levels were lower than those recorded during the baseline monitoring period during all periods. At Location K, noise levels were 4 dBA higher during the daytime and 1 dBA higher during the night-time.

Given that no data was available at Locations G and L during baseline measurements no comparison can be made.

A comparison of the current monitoring period with the previous monitoring period shows that recorded LA10 noise levels at Locations A, G, L and K were generally lower than levels recorded during the March 2011 quarterly monitoring. Noise levels at Location F were the 3 dBA higher than those recorded in the previous monitoring period during the evening and night-time.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA10 noise levels were similar (within 1 dBA) or lower than those recorded in June 2010 with the exception of a 3 dBA increase at Location G during the night-time.

Tuesday 20th September – Tuesday 4th October 2011 (September Quarter)

Table 25 presents a comparison between the noise statistics collected during the September 2011 quarter unattended continuous survey and the pre-mining baseline statistics.

TABLE 25: Unattended Continuous Monitoring Ambient Noise Levels, SEPTEMBER 2011 MONITORING PERIOD.

Location	Period	LA1	LA10	LA90	LAeq
A Weakleys Drive, Beresfield	Daytime	59	56	48	56
	Evening	60	55	47	54
	ENCM Daytime	59	56	47	55
	Night	59	54	40	52
F Lot 684 Black Hill Road, Black Hill	Daytime	70	59	44	58
	Evening	63	52	45	54
	ENCM Daytime	69	58	44	57
	Night	58	50	40	53
G 156 Buchanan Road, Buchanan	Daytime	52	47	33	47
	Evening	50	46	39	48
	ENCM Daytime	51	46	32	47
	Night	42	37	29	42
L 17 Kilshanny Ave, Ashtonfield	Daytime	56	47	33	54
	Evening	52	42	35	48
	ENCM Daytime	56	47	32	50
	Night	44	41	33	44
K Catholic Diocese of Maitland	Daytime	-	-	-	-
	Evening	-	-	-	-
	ENCM Daytime	-	-	-	-
	Night	-	-	-	-

*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 - 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 LA₉₀ Noise Levels

The summary of results in Table 25 show that ambient LA₉₀ noise levels recorded for the quarter ending September 2011 were higher than levels recorded during the baseline monitoring process at Location A by 3 dBA during the daytime and 1 dBA during the night-time. Increases of 5 dBA, 10 dBA and 9 dBA were recorded respectively in the daytime, evening and night-time at Location F.

Given that no data was available at Locations G and L during baseline measurements and no monitoring was conducted at Location K during the September quarter no comparisons can be made.

A comparison of the current monitoring period with the previous monitoring period shows that LA₉₀ noise levels were generally similar (within 2 dBA) or lower than those recorded during the June 2011 Locations F, G, and L. Increases of 7 dBA, 8 dBA and 9 dBA were recorded respectively in the daytime, evening and night-time periods at Location A and an increase of 3 dBA was recorded at location G in the evening.

Given that no monitoring was conducted at Location K during the September quarter no comparisons can be made.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA90 noise levels were generally similar (within 2 dBA) or lower than those recorded in 2010 at all locations.

Given that no monitoring was conducted at Location K during the September quarter no comparisons can be made.

Ambient LA₁₀ Noise Levels

The summary of results in **Table 25** show that ambient LA10 noise levels recorded for the quarter ending September 2011 were 8 dBA greater than levels recorded during the baseline monitoring process at Location F during the daytime, 3 dBA higher during the evening and 3 dBA higher during the night-time. At Location A LA10 noise levels were similar (within 2 dBA) to those recorded during the baseline monitoring period during all periods.

Given that no data was available at Locations G and L during baseline measurements and no monitoring was conducted at Location K during the September quarter no comparisons can be made.

A comparison of the current monitoring period with the previous monitoring period shows that recorded LA10 noise levels at Location A was 5 dBA higher during the daytime and 7 dBA higher during the evening and night-time.

Noise levels at location F were similar (within 1 dBA) to those recorded in June 2011. Noise levels at location G were 4 dBA higher during the daytime and evening and 3 dBA lower during the night-time. Noise levels at location L were up to 3 dBA higher than those recorded in the previous monitoring period.

Given that no monitoring was conducted at Location K during the September quarter no comparisons can be made.

A comparison of the current monitoring period with the coinciding monitoring period last year indicates that LA10 noise levels were similar (within 2 dBA) or lower than those recorded in September 2010 with the exception of a 4 dBA increase at Location G during the daytime.

Given that no monitoring was conducted at Location K during the September quarter no comparisons can be made.

Results of Attended Surveys

Tuesday 7th December - Friday 10th December 2010

Operator attended noise measurements were conducted on Tuesday 7 December 2010, Wednesday 8 December 2010 and Friday 10 December 2010. The results of the operator attended noise measurements are given in **Tables 26 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 26: ATTENDED SURVEY RESULTS – LOCATION A - 98 WEAKLEYS DRIVE BERESFIELD.

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 μ Pa)					Description of Noise Emission and Typical Maximum Levels L _{Amax} - dBA
		L _{Amax}	LA1	LA10	LA90	L _{Aeq}	
7/12/2010 11:05 W = Calm Temp = 28°C Cloud cover = 5/8	Daytime Ambient	67	62	58	53	56	Traffic (Weakleys Drive) ~ up to 65 Birds/insects ~ 50, Motorcycles next door ~ 67. Donaldson mine ~ inaudible.
7/12/2010 21:42 W = 1 m/s NE Temp = 22°C Cloud cover = 0/8	Evening Ambient	71	68	64	49	60	Traffic (Weakleys Dr) ~ up to 71. Crickets/insects/frogs ~ 51-53. Industrial Noise ~ 60 Donaldson mine ~ Inaudible
8/12/2010 00:35 W = Calm Temp = 20°C Cloud cover = 0/8	Night-time Ambient	77	74	64	45	61	Traffic (Weakleys Dr) ~ up to 77. Crickets/insects/frogs ~ 45. Distant road traffic ~ 45. Industrial noise ~ 46. Reverse beepers ~ 47.

TABLE 27: ATTENDED SURVEY RESULTS – LOCATION F – LOT 684 BLACK HILL ROAD, BLACK HILL

Date/Start Time Weather	Measurement Description	Primary Noise Descriptor (dBA re 20 μ Pa)					Description of Noise Emission and Typical Maximum Levels L _{Amax} - dBA
		L _{Amax}	LA1	LA10	LA90	L _{Aeq}	
7/12/2010 14:18 W = 1 m/s NE Temp = 27°C Cloud cover = 3/8	Daytime Ambient	86	78	62	49	64	Traffic (John Renshaw Dr) ~ up to 65 Traffic (Black Hill Rd) ~ up to 86. Insects ~ 50, Distant motorcycle ~ 48. Donaldson mine ~ inaudible.
7/12/2010 21:07 W = 1 m/s NE Temp = 22°C Cloud cover = 0/8	Evening Ambient	82	68	55	49	57	Traffic (John Renshaw Dr) ~ up to 55. Crickets/insects/frogs ~ 56-58. Aircraft ~ 52. Truck noise from unknown source to NE ~ 41 Traffic (Black Hill Road) ~ 81 Donaldson mine ~ Inaudible
7/12/2010 23:54 W = Calm Temp = 20°C Cloud cover = 0/8	Night-time Ambient	67	51	55	51	53	Traffic (John Renshaw Dr) ~ up to 56. Crickets/insects/frogs ~ 52-56. Operator noise ~ 67. Truck noise from unknown source to NE just audible ~ 45. Donaldson ~ inaudible

TABLE 28: ATTENDED SURVEY RESULTS – LOCATION G – 156 BUCHANAN ROAD, BUCHANAN

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}	
7/12/2010 11:17 W = 2 m/s NE Temp = 27°C Cloud cover = 4/8	Daytime Ambient	66	60	57	51	55	Distant Traffic (Buchanan Rd) ~ up to 55, Birds/insects ~ 53 Wind and leaf rustle ~ 55. Aircraft ~ 53-59. Bloomfield haul trucks occasionally just audible in lows Donaldson mine ~ Inaudible
7/12/2010 20:00 W = 1-2 m/s NE Temp = 23°C Cloud cover = 0/8	Evening Ambient	62	55	53	48	50	Insects ~ 41-47. Distant Traffic ~ 47. Aircraft ~ 50-54. Operator noise ~ 62. Bloomfield: - Haul truck rev ~ 51. - Bangs (bucket) ~ 47. - Tracks just audible @ 48 Donaldson mine ~ Inaudible
7/12/2010 22:50 W = 2 m/s NE Temp = 22°C Cloud cover = 0/8	Night-time Ambient	64	51	44	39	43	Frogs/Insects ~ 43. Bloomfield engine noise and track slap occasionally just audible ~ 39 Donaldson mine ~ Inaudible

TABLE 29: ATTENDED SURVEY RESULTS – LOCATION L - 17 KILSHANNY AVE, ASHTONFIELD

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}	
7/12/2010 11:58 W = 2 m/s NE Temp = 26°C Cloud cover = 6/8	Daytime Ambient	79	73	65	52	62	Birds/insects ~ up to 54, Banging ~ 71, Construction activities next door: - Banging ~ 71, - Truck idling ~ 65 - Truck drive off ~ 79 Distant lawn mowing ~ 50. Donaldson mine ~ Inaudible
7/12/2010 19:27 W = 1-2 m/s NE Temp = 21°C Cloud cover = 0/8	Evening Ambient	73	47	44	40	44	Local traffic ~ up to 64, Distant lawn mowing ~ 46, Insects/frogs/birds ~ up to 64, Dogs barking ~ 48, Local noise ~ 68. Donaldson mine ~ Inaudible
7/12/2010 22:00 W = 1m/s E Temp = 12°C Cloud cover = 0/8	Night-time Ambient	61	49	45	41	43	Distant road traffic ~ 42-45, Birds/insects ~ 40-42. Operator noise ~ 73. Distant dog barks ~ 40. Xmas tree lights ~ 40. Donaldson mine ~ Inaudible

TABLE 30: ATTENDED SURVEY RESULTS – LOCATION K - CATHOLIC DIOCESE OF MAITLAND (FORMERLY BARTTER ENTERPRISES)

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}	
10/12/2010 15:00 W = Calm Temp = 28°C Cloud cover = 5/8	Daytime Ambient	66	60	54	49	52	Road traffic ~ 51-56. Insects ~ 58-50 Aircraft ~ up to 66. Donaldson mine ~ Inaudible
7/12/2010 21:26 W = Calm Temp = 22°C Cloud cover = 0/8	Evening Ambient	94	81	72	55	71	Road Traffic ~ up to 94. Insects ~ 55-59. Donaldson mine ~ Inaudible
8/12/2010 00:16 W = 2 m/s NE Temp = 20°C Cloud cover = 0/8	Night-time Ambient	89	75	59	39	63	Road Traffic ~ up to 89. Distant road traffic ~ 50-52. Insects ~ 45. Donaldson mine ~ Inaudible

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as “natural” noise such as birds, insects and leaf rustle.

Donaldson Mine operations were inaudible at all residential locations during all operator attended noise surveys. As such, it is likely that contributed noise levels from Donaldson Mine did not exceed noise emission goals (including night-time sleep arousal criteria) and were in compliance with the Donaldson Mine *Project Approval*.

It was noted at Location F that truck noise was audible from an unidentified source in the direction of Donaldson Mine during the evening and night-time noise surveys. However, Donaldson Mine was operating on dayshift only during the operator attended noise surveys so the trucks were not associated with Donaldson operations.

Wednesday 9th March and Wednesday 23rd March 2011

Operator attended noise measurements were conducted on during the daytime on Wednesday 9 March 2011 and Wednesday 16 March 2011, during the evening on Wednesday 23 March 2011 and during the night-time on Tuesday 15 March 2011 and Wednesday 16 March 2011. The results of this survey are presented in **Tables 31-35**. 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}	
1/3/2011 11:33 W = 1-2 SW Temp = 28°C Cloud cover = 8/8	Daytime Ambient	64	57	53	47	51	Road Traffic (Weakleys Dr) ~ 60 Bangs and vehicles at industrial site next door ~ 54-64 Leaf rustle Bird/Geese ~ 50-52
23/3/11 19:20 W = Calm Temp = 27°C Cloud cover = 2/8	Evening Ambient	77	73	67	51	63	Road Traffic ~ 64, 66, 67, 74 Birds/Insects ~ 45 Aircraft ~ 53
16/3/11 01:14 W = Calm Temp = 19°C Cloud cover = 1/8	Night-time Ambient	74	70	60	42	57	Road Traffic (Weakleys Dr) ~ 50 - 74 Insects ~ 40 Local industrial noise ~ 50 Donaldson hauls just audible in lows ~ not measurable
Estimated Donaldson LA10(15min) contribution < 32 dBA							

TABLE 32: 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}	
9/3/11 13:17 W = 1 NW Temp = 26°C Cloud cover = 8/8	Daytime Ambient	86	77	63	49	64	Road Traffic ~ 52, 77, 86 Leaf rustle ~ 50 Other mine noise just audible in lows ~39 Donaldson/Abel mine ~ inaudible.
23/3/2011 20:38 W = Calm Temp = 26°C Cloud cover = 3/8	Evening Ambient	76	65	54	40	54	Traffic (John Renshaw Dr) ~ 68,30 Crickets/insects/frogs ~ 43-44 Distant Road Traffic ~ 44, 46 Road Traffic (Black Hill Rd) 71,76 Donaldson mine ~ Inaudible Other mine noise ~ up to 46
16/3/11 00:26 W = Calm Temp = 19°C Cloud cover = 1/8	Night-time Ambient	64	53	46	37	43	Road Traffic ~ 59 -57 Insects ~ 36 Donaldson haul trucks ~ 36,39, 42, 43 Track slap ~ 40-41 Quackers just audible
Estimated Donaldson LA10(15min) contribution ~ 39 dBA							

TABLE 33: ATTENDED SURVEY RESULTS – LOCATION G – 156 BUCHANAN ROAD, BUCHANAN

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}	LA1	LA10	LA90	L _{Aeq}	
9/3/11 14:43 W = 1-2 S Temp = 26°C Cloud cover = 7/8	Daytime Ambient	69	49	44	35	41	Road Traffic (Buchanan Rd) ~ 44-46 Birds/insects ~ 36 Wind and leaf rustle ~ 38. Aircraft ~ 47 Operator noise ~ 69 Donaldson mine ~ Inaudible
23/3/2011 21:18 W = 1 NW Temp = 26°C Cloud cover = 1/8	Evening Ambient	65	56	48	41	47	Road Traffic (Buchanan Rd) ~ 43 - 45 Insects/crickets ~ 42 Operator noise ~ 65 Distant aircraft ~ 44, 46, 52 Birds ~ 48 - 50, 56, 51. Mines ~ Inaudible
15/3/11 22:39 W = Calm Temp = 21°C Cloud cover = 2/8	Night-time Ambient	60	46	45	41	43	Crickets/Insects ~ 43 – Dominant Operator noise ~ 53, 60, 44 Distant road traffic ~ 42 – 43 Donaldson mine ~ just audible in lows (trucks) Other mine noise haul trucks ~ up to 49 Cut outs high frequency for contribution Leq
Estimated Donaldson LA10(15min) contribution ~ 35 dBA							

TABLE 34: ATTENDED SURVEY RESULTS – LOCATION L - 17 KILSHANNY AVE, ASHTONFIELD

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}	LA1	LA10	LA90	L _{Aeq}	
16/3/2011 16:45 W = 1-2 m/s NE Temp = 21°C Cloud cover = 0/8	Daytime Ambient	89	72	58	43	65	Birds/insects ~ up to 54, Road traffic ~ 62, Construction activities next door ~ 89. Donaldson mine ~ Inaudible
23/3/2011 21:45 W = 1 NW Temp = 25°C Cloud cover = 1/8	Evening Ambient	78	61	42	36	51	Door slam ~ 46 Road traffic ~ 78 Insects ~ 37 - 40 Residents talking ~ 40, 44, 50, 51 Other mine noise up to 40 Donaldson mine ~ Inaudible
16/3/11 01:38 W = Calm Temp = 19°C Cloud cover = 1/8	Night-time Ambient	59	43	41	37	39	Road traffic ~ 38, 40, 43 Insects ~ 38 - 39 Operator noise ~ max Other mine noise up to 44 Donaldson mine ~ Inaudible

TABLE 35: ATTENDED SURVEY RESULTS – LOCATION K - CATHOLIC DIOCESE OF MAITLAND (FORMERLY BARTTER ENTERPRISES)

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}	LA1	LA10	LA90	L _{Aeq}	
9/3/11 17:30 W = NW 1-2 Temp = 27°C Cloud cover = 8/8	Daytime Ambient	70	60	55	47	52	Road Traffic ~ 50,61,64 Birds/Insects ~ 46-47 Donaldson Haul trucks ~ 47-48, 52-53 Track slap ~ 48, 53-54
		Estimated Donaldson LA10(15min) contribution ~ 47 dBA					
23/3/2011 21:26 19:42 W = 1 NW Temp = 21°C Cloud cover = 2/8	Evening Ambient	94	82	73	53	71	Road Traffic ~ 70, 88, 94 Donaldson Mine audible between road traffic Haul ~ 54, 52, 51 Tracks ~ 53
		Estimated Donaldson LA10(15min) contribution ~ 50 dBA					
16/3/11 00:47 W = Calm Temp = 18°C Cloud cover = 1/8	Night-time Ambient	93	80	64	35	68	Road Traffic ~ 80, 83, 84, 89, 93 Birds/Insects ~ 44, 45 Donaldson haul trucks 36-37
		Estimated Donaldson LA10(15min) contribution ~ 36 dBA					

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as “natural” noise such as birds, insects and leaf rustle.

Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during all measurement periods and at Location A Weakleys Drive, Location F Black Hill Road and Location G Buchanan Road during the night-time period.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, SLR Consulting understand the dwellings on the Catholic Diocese site are 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 Catholic Diocese 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 at these residential locations approximately 41 dBA during the daytime, 40 dBA during the evening and less than 30 dBA during the night-time which is in compliance with Donaldson Mine consent.

The estimated Donaldson contribution at Location A during the night-time was less than LA10 32 dBA which is in compliance with Donaldson Mine consent.

The estimated Donaldson contribution at Location F during the night-time was approximately LA10 39 dBA. This is within the 2 dBA tolerance as per Chapter 11 of the INP and, as such, contributed noise levels at Location F are deemed to comply with those specified in the Donaldson Mine consent.

The estimated Donaldson contribution at Location G during the night-time was approximately LA10 35 dBA which is in compliance with Donaldson Mine consent.

Based on the results and observations from operator attended surveys, it is likely that contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

Friday 17th June and Wednesday 29th June 2011

Operator attended noise measurements were conducted during the daytime on Friday 17 June 2011 and Friday 24 June 2011, during the evening on Wednesday 29 June 2011 and during the night-time on Wednesday 29 June 2011.

The results of the operator attended noise measurements are given in **Tables 36-40**. 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 36: 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
		LAmx	LA1	LA10	LA90	LAeq	
17/6/2011 10:05 W = 2-3 m/s SE - NE Temp = 18°C Cloud cover = 0/8	Daytime Ambient	70	60	57	51	54	Road Traffic (Weakleys Dr) ~ 54-60 Leaf rustle ~ 50-52 Bird/Geese ~ 54-59 Donaldson mine- inaudible
29/6/2011 20:50 W = Calm Temp = 14°C Cloud cover = 6/8	Evening Ambient	77	73	67	51	63	Road Traffic ~ 64, 66, 67, 74 Birds/Insects ~ 45 Aircraft ~ 53 Donaldson Mine- Inaudible
29/6/2011 23:45 W = Calm Temp = 12°C Cloud cover = 6/8	Night-time Ambient	77	74	63	47	61	Road Traffic (Weakleys Dr) ~ 50 – 77 Insects ~ 50 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 L _{Amax} – dBA
		L _{Amax}	LA1	LA10	LA90	L _{Aeq}	
17/6/2011 10:32 W = 2-3 m/s SE - NE Temp = 18°C Cloud cover = 0/8	Daytime Ambient	81	69	57	49	57	Traffic (John Renshaw Dr) ~ up to 63 Traffic (Black Hill Rd) ~ up to 81. Insects ~ 48-52, Leaf rustle ~ 45-50. Donaldson mine ~ inaudible.
29/6/2011 20:50 W = Calm Temp = 14°C Cloud cover = 6/8	Evening Ambient	83	69	57	53	59	Traffic (John Renshaw Dr) ~ 69 Crickets/insects/frogs ~ 54 Distant Road Traffic ~ 53 Road Traffic (Black Hill Rd) ~ 83 Donaldson mine ~ inaudible.
29/6/2011 23:10 W = Calm Temp = 12°C Cloud cover = 6/8	Night-time Ambient	75	61	57	53	56	Traffic (John Renshaw Dr) ~ up to 57-66. Crickets/insects/frogs ~ 55-57. Operator noise ~ 75. Mine noise to north east ~ up to 50. Donaldson mine ~ haul trucks audible up to 56 Quaker ~ 53
		Estimated Donaldson LA10(15min) contribution ~ 50 dBA					

TABLE 38: ATTENDED SURVEY RESULTS – LOCATION G – 156 BUCHANAN ROAD, BUCHANAN

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}	LA1	LA10	LA90	L _{Aeq}	
24/6/2011 17:30 W = Calm Temp = 18°C Cloud cover = 0/8	Daytime Ambient	70	59	44	37	46	Distant Traffic (Buchanan Rd) ~ up to 46, Birds/insects ~ 36 Wind and leaf rustle ~ 38. Operator noise ~ 70.
29/6/2011 16:40 W = <1 NE Temp = 26°C Cloud cover = 1/8	Evening Ambient	65	54	50	42	47	Road Traffic (Buchanan Rd) ~ 46-48 Distant road traffic (John Renshaw Drive) ~ 48 Insects/crickets ~ up to 52 Operator noise ~ 65. Bloomfield Haul trucks ~ 44-48 Track slap ~ 45
29/6/2011 22:20 W = Calm Temp = 13°C Cloud cover = 6/8	Night-time Ambient	64	51	44	40	43	Frogs/Insects ~ 44 (dominant). Operator noise ~ 64. Distant road traffic ~ 42-51. Bloomfield engine noise ~ haul and excavator ~ 41-43.

TABLE 39: ATTENDED SURVEY RESULTS – LOCATION L - 17 KILSHANNY AVE, ASHTONFIELD

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	
24/6/2011 17:08 Calm Temp = 18°C Cloud cover = 0/8	Daytime Ambient	72	58	43	35	46	Birds/insects ~ up to 44, Road traffic ~ 51, Car door ~ 54, Dog bark ~ 35-40.
29/6/2011 19:30 W = Calm Temp = 15°C Cloud cover = 5/8	Evening Ambient	74	57	46	42	49	Road traffic ~ 74 Insects ~ 42 Aircraft ~ 49 Rail ~ 42-44 Bloomfield trackslap occasionally just audible in lows
29/6/2011 22:00 W = Calm Temp = 13°C Cloud cover = 6/8	Night-time Ambient	63	55	45	41	45	Distant road traffic ~ 46, Road traffic ~ 63 Birds/insects ~ 44. Bloomfield ~ train ~ 43. ~ ROM just audible in lows

TABLE 40: ATTENDED SURVEY RESULTS – LOCATION K - CATHOLIC DIOCESE OF MAITLAND (FORMERLY BARTTER ENTERPRISES)

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	
24/6/2011 16:15 W = Calm Temp = 18°C Cloud cover = 0/8	Daytime Ambient	76	65	59	50	56	Road Traffic ~ to 59 Birds/Insects ~ 47-57 Local construction works ~ 57-76
29/6/2011 21:26 21:05 W = Calm Temp = 14°C Cloud cover = 6/8	Evening Ambient	89	81	73	48	70	Road Traffic ~ to 89 Donaldson Mine haul trucks possibly just audible between road traffic in lows of < 45
Estimated Donaldson LA10(15min) contribution ~ < 39 dBA							
29/6/11 23:25 W = Calm Temp = 12°C Cloud cover = 6/8	Night-time Ambient	89	80	69	43	68	Road Traffic ~ up to 89 Water pump ~ 42 Donaldson haul trucks 40-43
Estimated Donaldson LA10(15min) contribution ~ 43 dBA							

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as “natural” noise such as birds, insects and leaf rustle.

Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) during the evening and night-time and at Location F Black Hill Road during the night-time period.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, SLR Consulting understand the dwellings on the Catholic Diocese site are 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 Catholic Diocese 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 at these residential locations was less than 33 dBA during the evening and approximately 37 dBA during the night-time which is in compliance with Donaldson Mine consent.

The estimated Donaldson contribution at Location F during the night-time was approximately LA10 50 dBA. This is an exceedence of the consent noise limits, however, Location F is now a mine owned property and therefore the noise limits do not apply in accordance with Condition 15 of the consent conditions.

Based on the results and observations from operator attended surveys, it is likely that contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

Wednesday 21st September - Thursday 22nd September 2010

Operator attended noise measurements were conducted during the daytime on Thursday 22 September 2011, during the evening on Wednesday 21 September 2011 and during the night-time on Wednesday 21 September 2011.

The results of the operator attended noise measurements are given in **Tables 41 to 45**. 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 41: 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	
22/9/2011 15:40 W = 1-2 m/s SE Temp = 26°C Cloud cover = 0/8	Daytime Ambient	74	66	60	51	57	Road Traffic (Weakleys Dr) ~ 50-55 Motorbikes next door ~ 64 Door slam ~ 74 Donaldson inaudible
21/9/2011 18:45 W = Calm Temp = 15°C Cloud cover = 0/8	Evening Ambient	76	71	66	54	63	Road Traffic ~ up to 76 Birds/Insects ~ 50 Donaldson inaudible
21/9/2011 22:00 W = Calm Temp = 11°C Cloud cover = 6/8	Night-time Ambient	73	70	64	50	61	Road Traffic (Weakleys Dr) ~ 50-73 Insects ~ 50 Donaldson inaudible

TABLE 42: 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	
22/9/2011 15:00 W = 1-2 m/s SE Temp = 26°C Cloud cover = 0/8	Daytime Ambient	87	79	64	47	65	Traffic (John Renshaw Dr) ~ up to 66 Traffic (Black Hill Rd) ~ up to 87. Insects ~ 47-50, Donaldson mine ~ inaudible.
21/9/2011 19:20 W = Calm Temp = 15°C Cloud cover = 0/8	Evening Ambient	83	74	58	48	61	Traffic (John Renshaw Dr) ~ 73 Crickets/insects/frogs ~ 48-51 Distant Road Traffic ~ 48-50 Road Traffic (Black Hill Rd) ~ 83 Donaldson Haul ~ 50-54
		Estimated Donaldson LA10(15min) contribution ~ 50 dBA					
21/9/2011 22:30 W = Calm Temp = 11°C Cloud cover = 6/8	Night-time Ambient	79	65	55	45	55	Traffic (John Renshaw Dr) ~ up to 57-66. Traffic (Black Hill Rd) ~ 79 Crickets/insects/frogs ~ 49. Donaldson haul ~ 45- 50.
		Estimated Donaldson LA10(15min) contribution ~ 45 dBA					

TABLE 43: ATTENDED SURVEY RESULTS – LOCATION G – 156 BUCHANAN ROAD, BUCHANAN

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	
22/9/2011 14:00 W = 1-2 m/s N Temp = 26°C Cloud cover = 0/8	Daytime Ambient	67	51	40	33	41	Distant Traffic (Buchanan Rd) ~ up to 38, Birds/insects ~ 41-46 Residential noise ~ 35. Operator noise ~ 67. Other mine noise just audible in lows ~ 30 Donaldson inaudible
21/9/2011 20:15 W = Calm Temp = 15°C Cloud cover = 0/8	Evening Ambient	60	47	42	35	40	Road Traffic (Buchanan Rd) ~ 46-48 Insects/crickets ~ up to 52 Aircraft ~ 47 Operator noise ~ 60 Other mine noise~ 36-38 Quackers~ 45 Donaldson Inaudible
21/9/2011 23:25 W = Calm Temp = 10°C Cloud cover = 0/8	Night-time Ambient	66	51	39	31	39	Frogs/Insects ~ 33-36 (dominant). Operator noise ~ 66. Distant road traffic ~ 34-39. Donaldson inaudible

TABLE 44: ATTENDED SURVEY RESULTS – LOCATION L - 17 KILSHANNY AVE, ASHTONFIELD

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	
22/9/2011 13:30 1-3 m/s NW Temp = 26°C Cloud cover = 0/8	Daytime Ambient	77	67	48	37	53	Distant road traffic ~ up to 38, Road traffic ~ 77, Leaf rustle~ 41-46, Construction ~53. Donaldson ~ Inaudible
21/9/2011 21:05 W = Calm Temp = 11°C Cloud cover = 0/8	Evening Ambient	73	51	43	38	44	Road traffic ~ 73 Distant road traffic ~ 39-44 Insects ~ 39 Operator noise ~ 73 Donaldson inaudible
29/6/2011 23:55 W = Calm Temp = 10°C Cloud cover = 0/8	Night-time Ambient	58	47	40	34	38	Distant road traffic ~ 46, Birds/insects ~ 38. Other mine noise ~ occasional trackslap ~ 42-45 once to 49 Donaldson inaudible

TABLE 45: ATTENDED SURVEY RESULTS – LOCATION K - CATHOLIC DIOCESE OF MAITLAND (FORMERLY BARTTER ENTERPRISES)

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	
22/9/2011 15:20 W = 1-2 m/s SE Temp = 26°C Cloud cover = 0/8	Daytime Ambient	91	85	80	56	75	Road Traffic ~ to 91 Birds/Insects ~ 47-57 Donaldson inaudible
21/9/2011 19:05 W = Calm Temp = 15°C Cloud cover = 0/8	Evening Ambient	95	84	75	53	73	Road Traffic ~ to 85 Donaldson Mine haul trucks possibly just audible between road traffic in lows – not measurable
		Estimated Donaldson LA10(15min) contribution ~ <43 dBA					
21/9/2011 22:15 W = Calm Temp = 11°C Cloud cover = 6/8	Night-time Ambient	87	82	75	52	71	Road Traffic ~ up to 87 Donaldson haul trucks and squeaky tracks 50-52
		Estimated Donaldson LA10(15min) contribution ~ 45 dBA					

Noise generated by local and distant traffic was a significant contributor to noise levels at all monitored locations as well as “natural” noise such as birds, insects and leaf rustle.

Donaldson Mine operations were observed to be audible at Location K Catholic Diocese of Maitland (formerly Bartter Enterprises) and at Location F Black Hill Road during the evening and night-time period.

Condition 23 of Schedule 2 of the Donaldson Mine consent is currently operable at the Catholic Diocese site with an agreement in place for the receiver to accept higher noise levels. However, SLR Consulting understand the dwellings on the Catholic Diocese site are 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 Catholic Diocese 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 at these residential locations was less than 31 dBA during the evening and approximately 33 dBA during the night-time which is in compliance with Donaldson Mine consent.

The estimated Donaldson contribution at Location F during the evening and night-time was approximately LA10 50 dBA and 45 dBA respectively. This is an exceedence of the consent noise limits, however, Location F is now a mine owned property and therefore the noise limits do not apply in accordance with Condition 15 of the consent conditions.

Based on the results and observations from operator attended surveys, it is likely that contributed noise levels from Donaldson Mine comply with noise emission goals for all periods.

Complaints Based Noise Monitoring

There was no complaints based noise monitoring event during the 2011 AEMR reporting period.

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 2011 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.

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:

Donaldson Coal 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.

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.

A hazard burn reduction was undertaken during the 2009 AEMR period. In April 2009, the Rural Fire Service completed a controlled burn off along the Hunter Water Corporation water pipeline. Hazard reduction will again 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 fuel loading reduction was undertaken during the 2011 AEMR period. The area around the Donaldson Coal Administration and Donaldson Open Cut offices was cleared using a trittering machine in accordance with an approval from the Rural Fire Service.

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 were no externally reportable environmental incidents recorded at the mine during the reporting period.

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 four (4) complaints received by Donaldson Coal on the 1800 111 271 community hotline during the 2011 AEMR reporting period, with seventeen (17) received in the previous AEMR reporting period. The complaints were in relation to blast (3) impacts and dumping in bushland. Information about the complaints is provided in **Appendix 4**. All complaints are followed up and remedial or additional monitoring is undertaken as required.

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 were no CCC meetings held at the Donaldson Mine site during the 2011 AEMR reporting period.

4.2.2 Site Tours/Inspections

The CCC did not inspect the mine during the 2011 AEMR period. Donaldson proposes to continue site inspections when required by the CCC so that CCC members can see the operation first hand.

4.2.3 Community Newsletters

There were no community newsletters prepared in the 2011 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.gloucester.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%)

Donaldson Coal 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 OPEN CUT 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 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

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 0 hectares were rehabilitated. Rehabilitation includes 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 2010/11 AEMR reporting period all areas of rehabilitation were treated following the recommendations of the URS report.

Actions undertaken during the 2010 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 mentioned 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
- Repairs undertaken to drains in rehabilitation 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 area for rehabilitation is the emplacement areas outside of the active mining area known as the Top Dump, in the northern 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 0 Ha of rehabilitation was completed in this 2011 AEMR reporting period with a rehabilitation area of 1.13 Ha planned for 2011-2012. The area rehabilitated in 2009-10 was less than the projected MOP target due to the incomplete sections of the final landform in the Top Dump and Out of Pit Emplacement being available. The rehabilitation report for 2011 is provided in **Appendix 7**. The latest rehabilitation plan, October 2011, and the forecast plan for October 2012 are provided in **Appendix 8**.

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 2012, 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.

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.

- The Open Cut will continue in a westerly direction.
- The final MOP and Mine Closure plan was submitted to and approved by the Department.

7. DEVELOPMENT CONSENT COMPLIANCE REVIEW

An Independent Environmental Audit of the Donaldson Coal Mine was conducted during May 2010 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:

“In conclusion the audit findings confirm a high degree of compliance with the requirements of the MCoA, Environment Protection Licence and Mining Lease.”

8. REFERENCES

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- Richard Heggies & Associates Pty Ltd (2011b) *Noise Monitoring Survey, First Quarter 2011, Donaldson Mine*, Unpublished reported completed by Donaldson Coal
- Richard Heggies & Associates Pty Ltd (2011c) *Noise Monitoring Survey, Second Quarter 2011, Donaldson Mine*, Unpublished reported completed by Donaldson Coal
- Richard Heggies & Associates Pty Ltd (2011d) *Noise Monitoring Survey, Third Quarter 2011, 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
- EcoBiological *Recolonisation Success of Rehabilitation Works – December 2010* Donaldson Coal Open Cut Mine, Unpublished report for Donaldson Coal Pty Ltd
- EcoBiological (2011) *Annual Survey of the Tetratheca juncea Conservation Area 2010*, Donaldson Coal Open Cut Mine, 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 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.

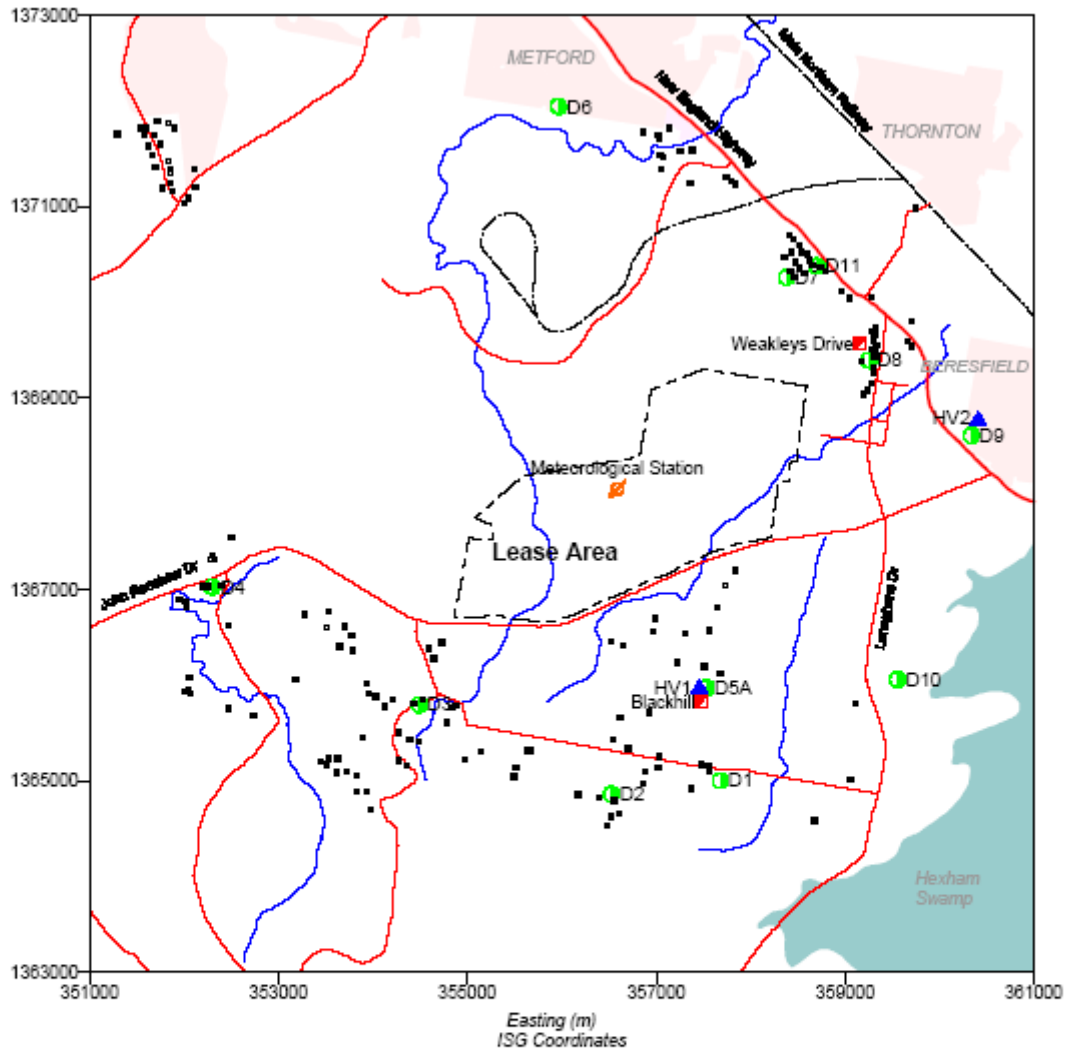
A handwritten signature in black ink, appearing to read "Brendan McPherson".

BRENDAN McPHERSON
Chief Executive Officer – Donaldson Project.

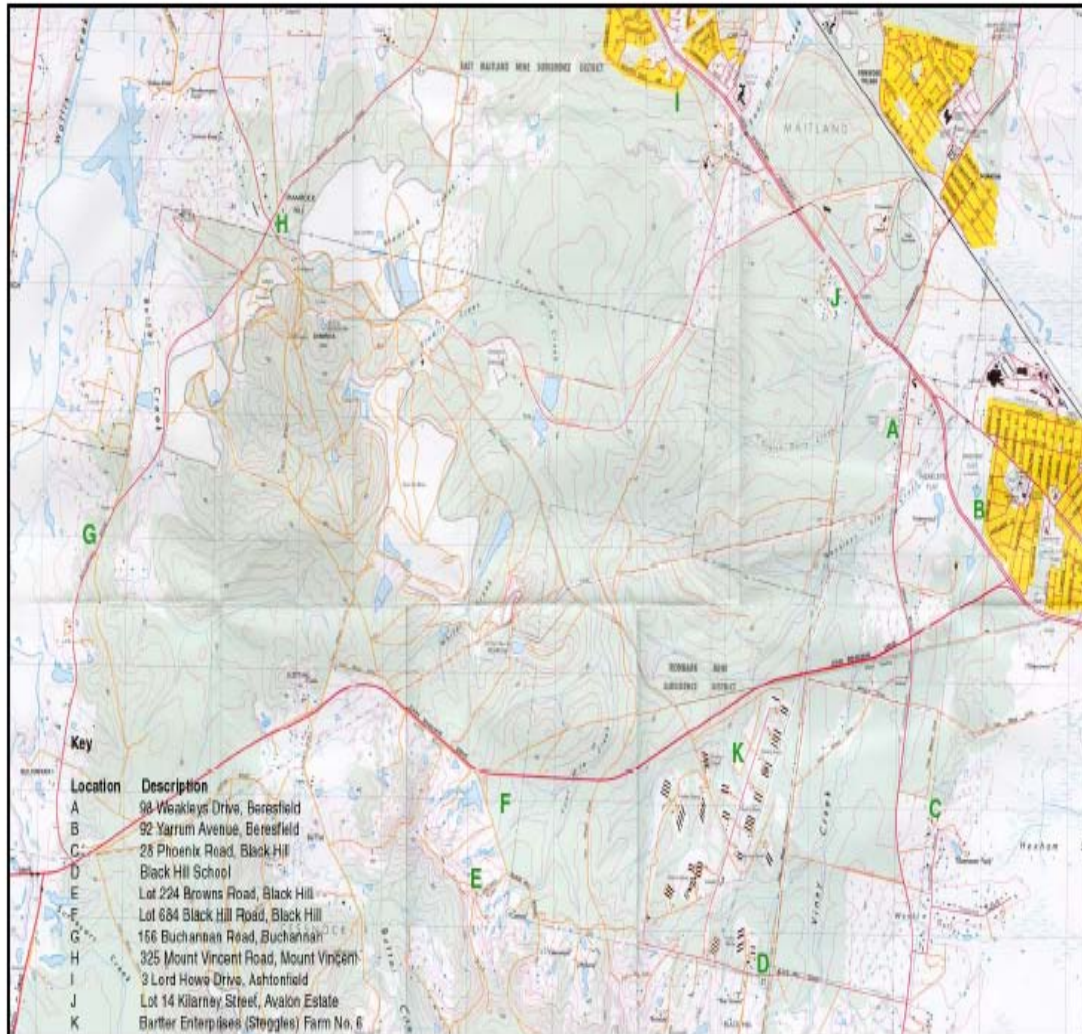
SEPTEMBER 2000.

APPENDIX 2:

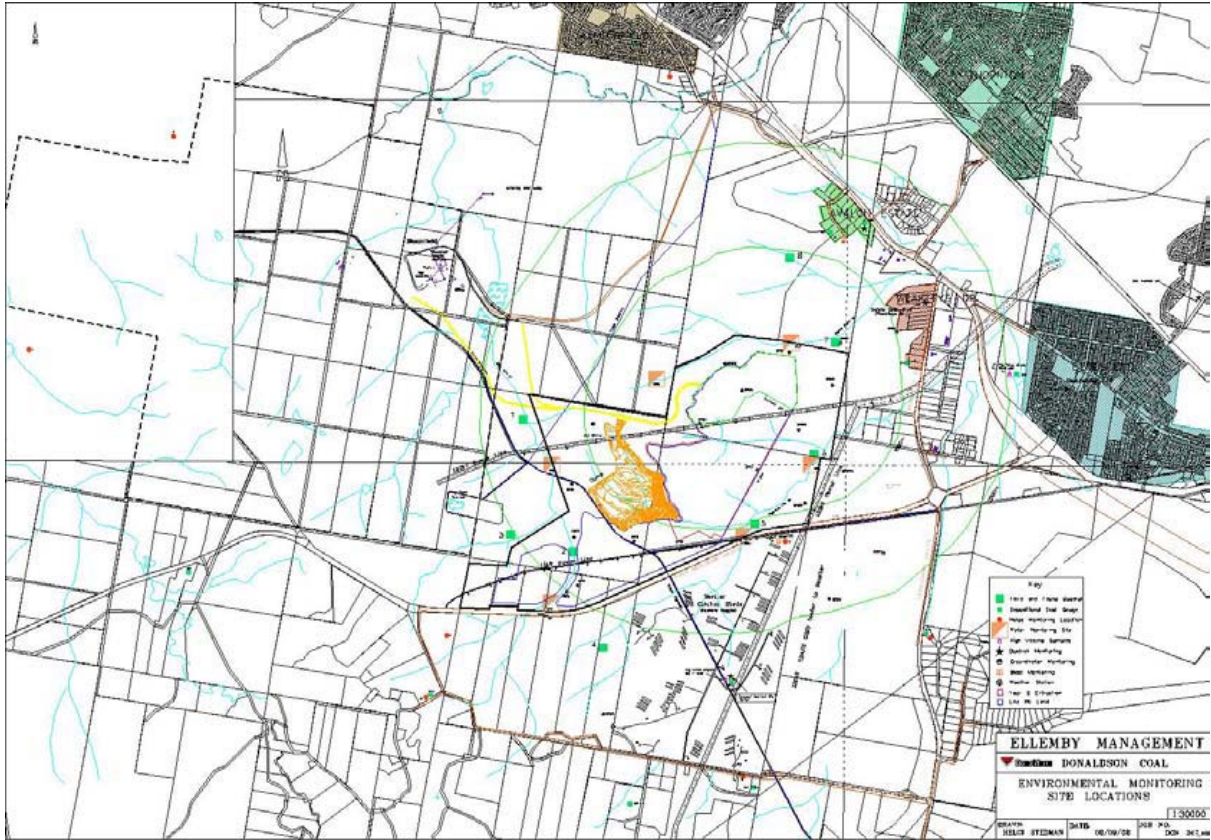
Site Locality Plan and Monitoring Locations



Locations of Air Pollution Monitoring Equipment.



Locations of Noise Monitoring Equipment during the 2011 AEMR period.



Water Monitoring Locations

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 2010/11 AEMR reporting period)

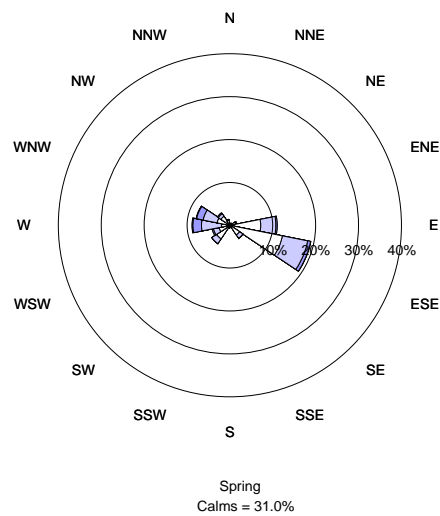
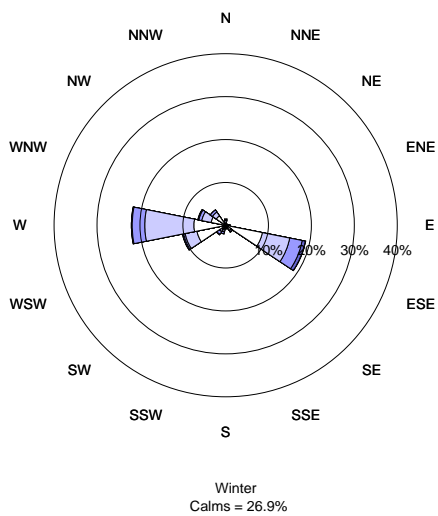
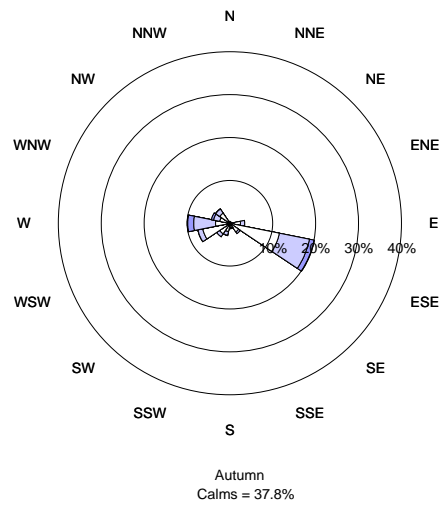
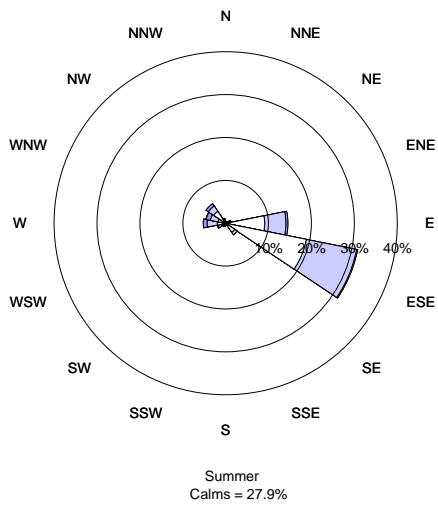
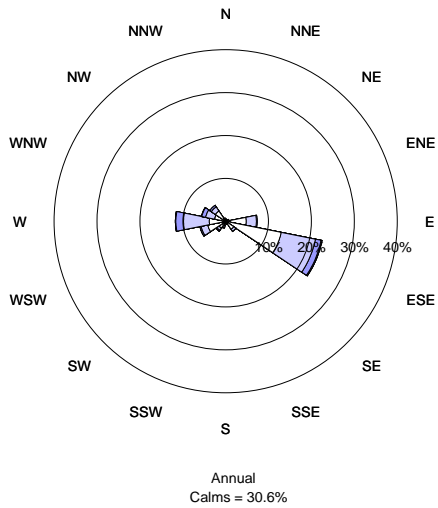
Complaints - November 2010 to October 2011

Ref	Location	Date	Issue	Response
Donaldson	John Renshaw Drive	12/11/10	Complained about blast	Blast was within limits
Donaldson	Corner Blackhill Rd and John Renshaw Drive	24/11/10	Complained about blast. One of the largest she has felt.	Blast was within limits
Donaldson	Corner Blackhill Rd and John Renshaw Drive	24/11/10	Blast rocked the house	Blast was within limits
Donaldson	Blackhill Rd, Blackhill	31/1/11	Load of asbestos dumped in bushland off Blackhill Road.	Asbestos company removed material and disposed of same at the Council Waste Facility

APPENDIX 5:

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

Annual and seasonal windroses for Donaldson (November 2010 - September 2011)



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)	43.36	37.97	40.78
B2: Active Mining Area (excluding items B3 – B5 below)	37.90	18.03	43.31
B3 Waste emplacements, (active/unshaped/in or out-of-pit)	33.20	34.18	24.63
B4 Tailings emplacements, (active/unshaped/uncapped)	0	0	0
B5 Shaped waste emplacement (awaits final vegetation)	42.59	43.72	53.82
ALL DISTURBED AREAS	157.05	133.90	162.54
C REHABILITATION PROGRESS			
C1 Total Rehabilitated area (except for maintenance)	139.93	141.22	141.06
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	139.93	141.22	141.06
E3 Plantations and crops	0	0	0
E4 Other (include non-vegetative outcomes)	0	0	0

F1

F2

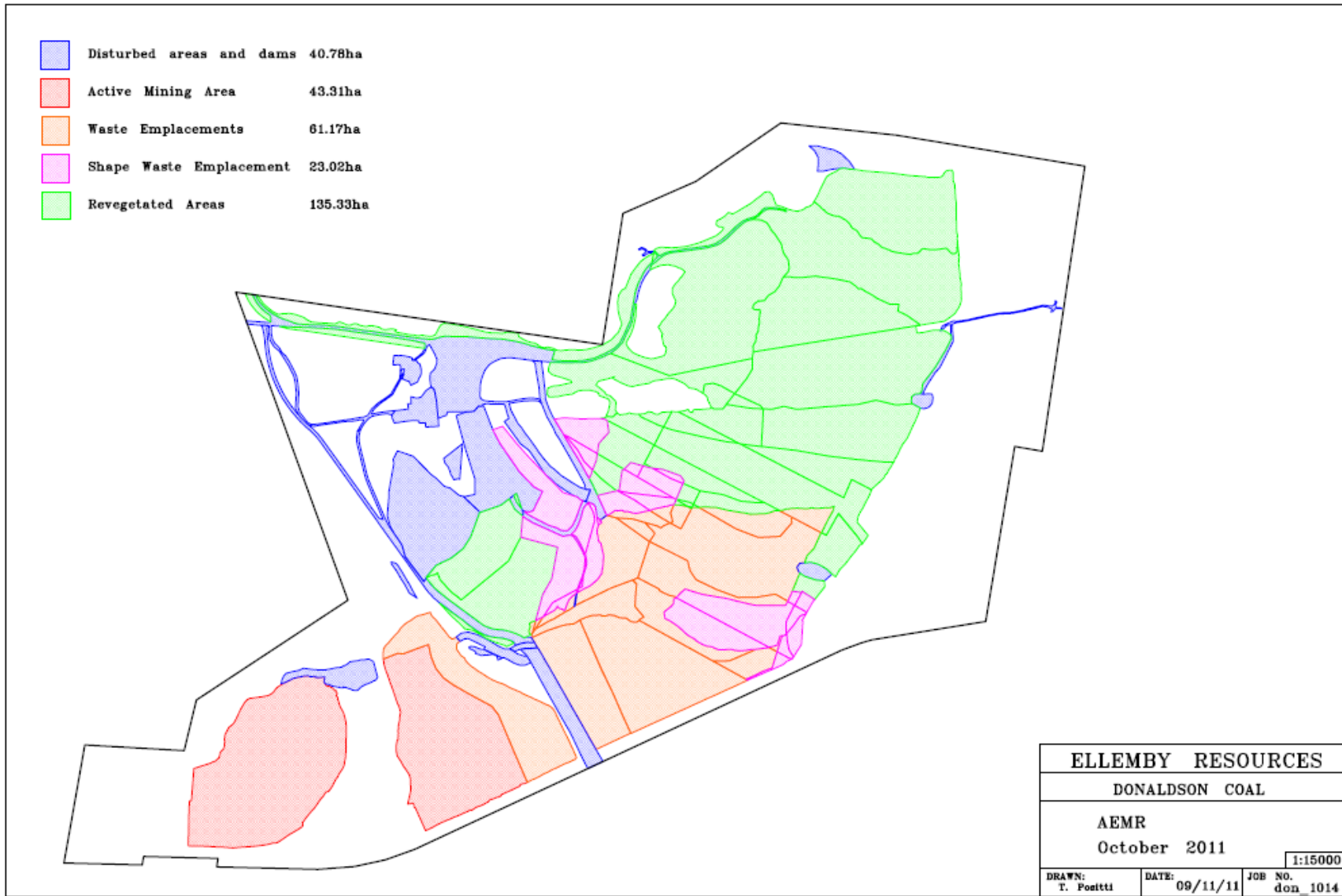
TABLE: MAINTENANCE ACTIVITIES ON REHABILITATED LAND

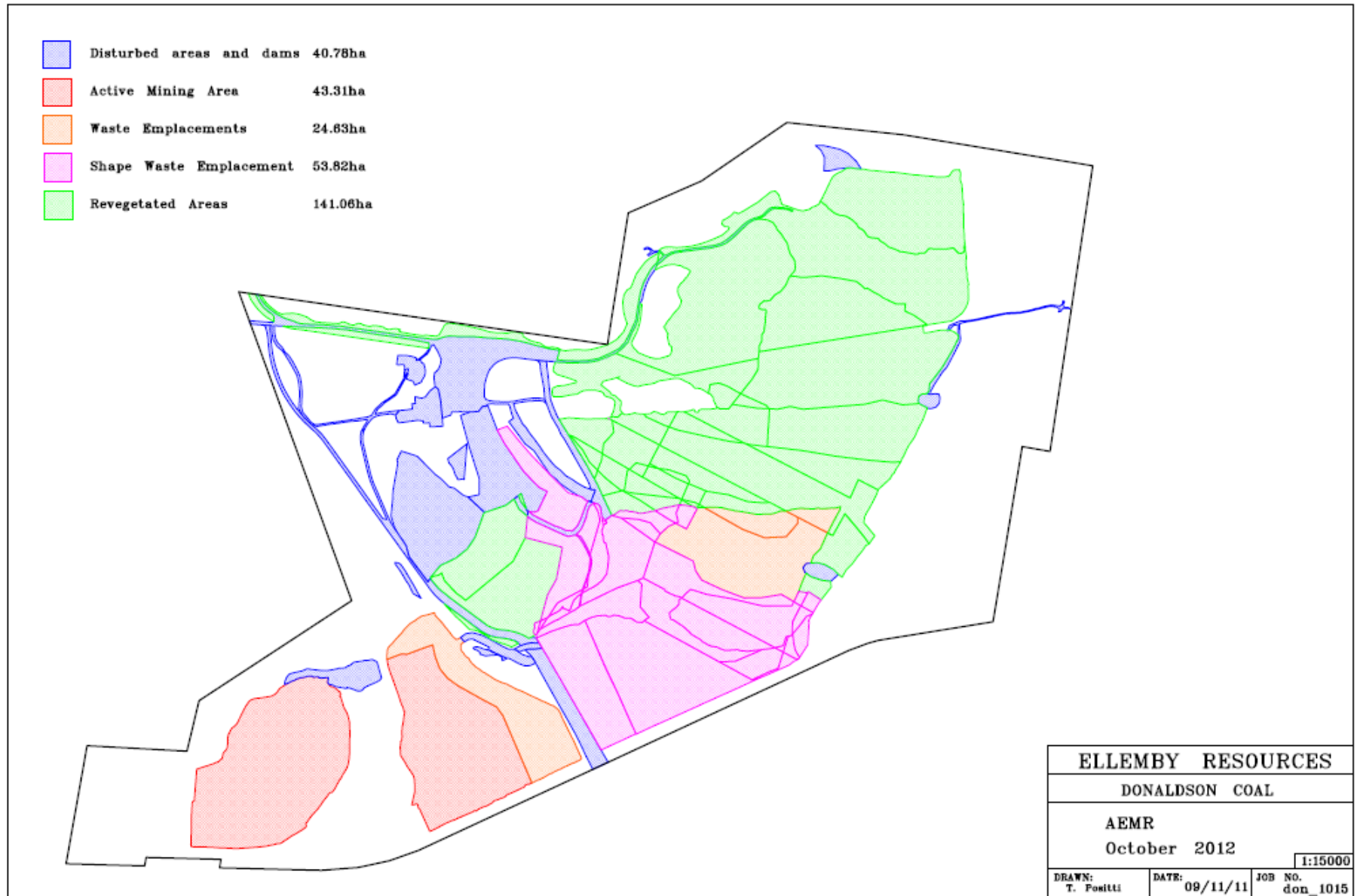
(This period's activities and activities proposed in the next reporting period)

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	
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





APPENDIX 9:

Blast Monitoring Results

Date	Fairfax Peak		Pipeline Peak		Abakk Peak		Jennings Peak		Comment
	Vector Sum Vibration	Air Blast Overpressure	Vector Sum Vibration	Vector Sum Vibration	Air Blast Overpressure	Vector Sum Vibration	Air Blast Overpressure		
9 Nov 2010 12.07	0.059	93.9	2.085	0.98	97.8	0.81	91.4		
12 Nov 2010 12.06	0.079	93.7	1.745	1.58	108.2	0.565	104.9		
24 Nov 2010 12.06	0.079	92.1	NR	1.321	111.5	0.662	103.2	Pipeline monitor not on mobile network due to low external battery voltage & did not receive trigger SMS	
1 Dec 10 13.55	0.026	93	1.17	0.411	108	0.286	104.1		
8 Dec 10 12.15	0.059	88.6	1.464	0.898	106.5	0.247	101.8		
15 Dec 10 12.04	0.039	91.4	1.405	0.588	103.1	0.182	99		
22 Dec 10 12.12	0.046	92.6	1.405	0.581	104.6	0.169	97.2		
12 Jan 2011 12.10	0.039	87.9	0.863	***		0.441	103.2	*** Donaldson Coal Pty Limited purchased this property in January 2011	
19 Jan 2010 12.05	0.066	90	2.15			0.666	109.8		
2 Feb 2011 12.13	0.072	94.6	3.516			1.077	108.8		
4 Feb 2011 12.12	0.066	94.4	2.529			0.733	105.2		
11 Feb 2011 12.10	0.046	102.4	3.849			0.227	105.6		
18 Feb 2011 12.11	0.046	92.8	3.085			0.558	95		
23 Feb 2011 12.08	0.039	92.8	2.019			0.221	101.7		
2 Mar 11 12.05	0.059	91.9	1.771			0.779	108.2		
4 Mar 11 12.15	0.046	92.8	1.294			0.182	100.3		
9 Mar 11 12.09	0.085	106.1	1.764			0.688	112.3		
16 Mar 11 12.16	0.072	100.4	1.549			0.915	105.5		
17 Mar 11 12.15	0.059	101.8	1.928			0.532	104.9		
23 Mar 11 12.08	0.072	99.2	1.49			0.948	105.4		
30 Mar 11 12.06	0.085	98.3	1.562			0.941	105.4		
6 Apr 11 12.12	0.046	94.4	2.614			0.188	95.7		
8 Apr 11 12.08	0.053	99.7	1.568			0.221	104.4		
14 Apr 11 12.22	0.085	96.7	1.529			1.24	105		
May 4 2011 12.14	0.046	100.5	2.372			0.48	94.7		
May 6 2011 12.11	0.059	98.5	1.47			0.863	101.1		
May 11 2011 12.12	0.039	95.6	1.863			0.26	108.1		
May 19 2011 12.06	0.039	97.1	0.921			0.318	106		
May 27 2011 12.09	0.059	99.1	2.137			0.558	100.9		
13 July 2011 12.06	0.046	109.1	1.281			0.545	106.7		
21 July 2011 12.13	0.085	104.8	2.496			1.246	105.4		
27 July 2011 12.09	0.105	106.8	2.581			1.337	104.7		
5 Aug 11 12.12	0.105	104.9	0.497			1.09	105.2		
12 Aug 11 12.30	0.099	107.3	1.83			2.812	104.5		
17 Aug 11 12.10	0.046	95	1.255			0.239	104.6		
26 Aug 11 12.12	0.043	90	0.926			0.187	96.2		
31 Aug 11 12.08	0.105	95.6	2.128			1.367	105.1		
7 Sept 2011 12.11	0.056	92.3	1.815			0.353	104.3		
Minimum	0.026	87.9	0.497	0.411	97.8	0.169	91.4		
Average	0.06	96.79	1.84	0.91	105.67	0.66	103.25		
Maximum	0.105	109.1	3.849	1.58	111.5	2.812	112.3		
Number of Blasts	38	38	37	7	7	38	38		
% Blast Results	100	100	97.4	100	100	100	100		